US006543182B2

(12) **United States Patent**
Snell et al.

(10) **Patent No.: US 6,543,182 B2**
(45) **Date of Patent: Apr. 8, 2003**

(54) **APPARATUS FOR MONITORING AND/OR CONTROLLING TERMITES**

(75) Inventors: **Eric J. Snell**, Line Lexington, PA (US); **Joe H. Hope, III**, Mebane, NC (US); **Bruce C. Yeagle**, Langhorne, PA (US)

(73) Assignee: **Aventis CropScience S.A.**, Lyons (FR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/819,582**

(22) Filed: **Mar. 28, 2001**

(65) **Prior Publication Data**

US 2002/0023382 A1 Feb. 28, 2002

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/644,448, filed on Aug. 23, 2000, now abandoned, and a continuation-in-part of application No. 09/644,449, filed on Aug. 23, 2000, now abandoned.

(51) **Int. Cl.**[7] **A01M 1/20**
(52) **U.S. Cl.** **43/132.1**
(58) **Field of Search** 43/132.1

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,158,166 A * 12/2000 Snell et al. 43/131
6,164,010 A * 12/2000 Snell et al. 43/131
6,378,243 B1 * 4/2002 Snell et al. 43/131

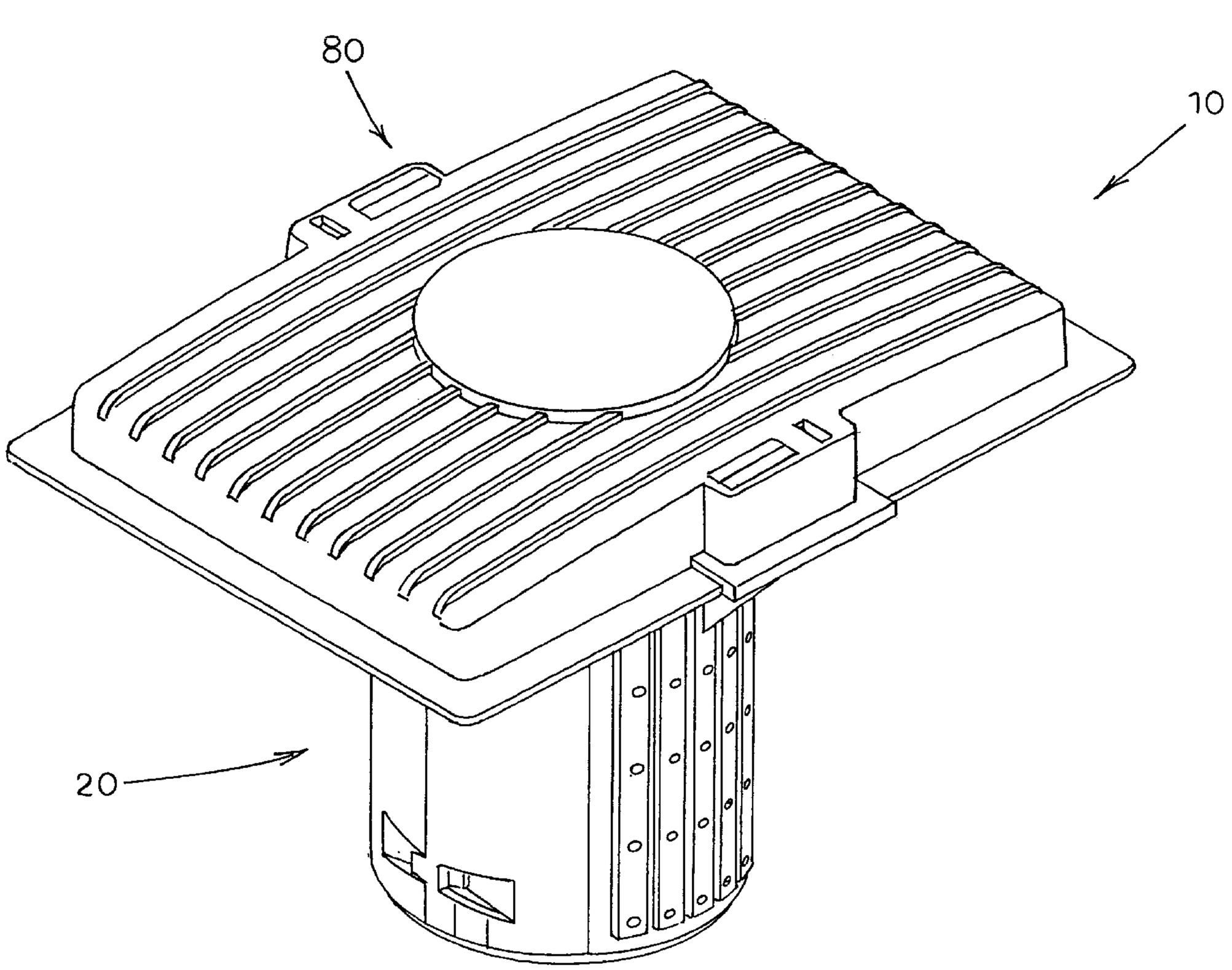
* cited by examiner

Primary Examiner—Charles T. Jordan
Assistant Examiner—Jordan M Lofdahl
(74) *Attorney, Agent, or Firm*—Connolly Bove Lodge and Hutz LLP

(57) **ABSTRACT**

A housing is provided for a station or device adapted for monitoring and/or controlling termites or other insects, and which is adapted to be situated in or on soil or sand. The housing contains a substance attractive for termite exploration and/or termite feeding, and comprises at least one wall and at least one surface, which surface defines at least one path attractive to termites, such as a groove or a channel. The housing can be adapted to receive a second insect monitoring and controlling device.

30 Claims, 39 Drawing Sheets



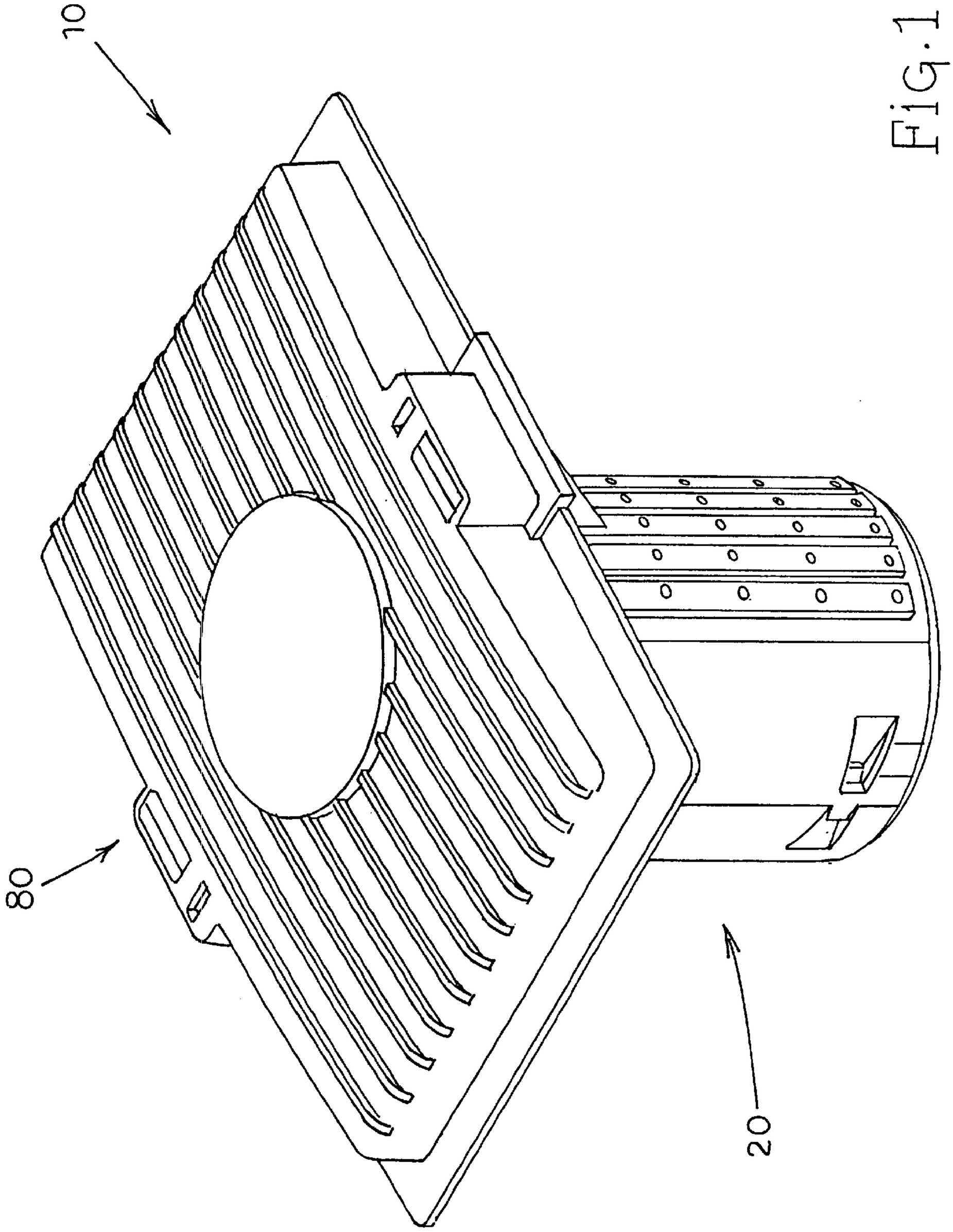


Fig. 1

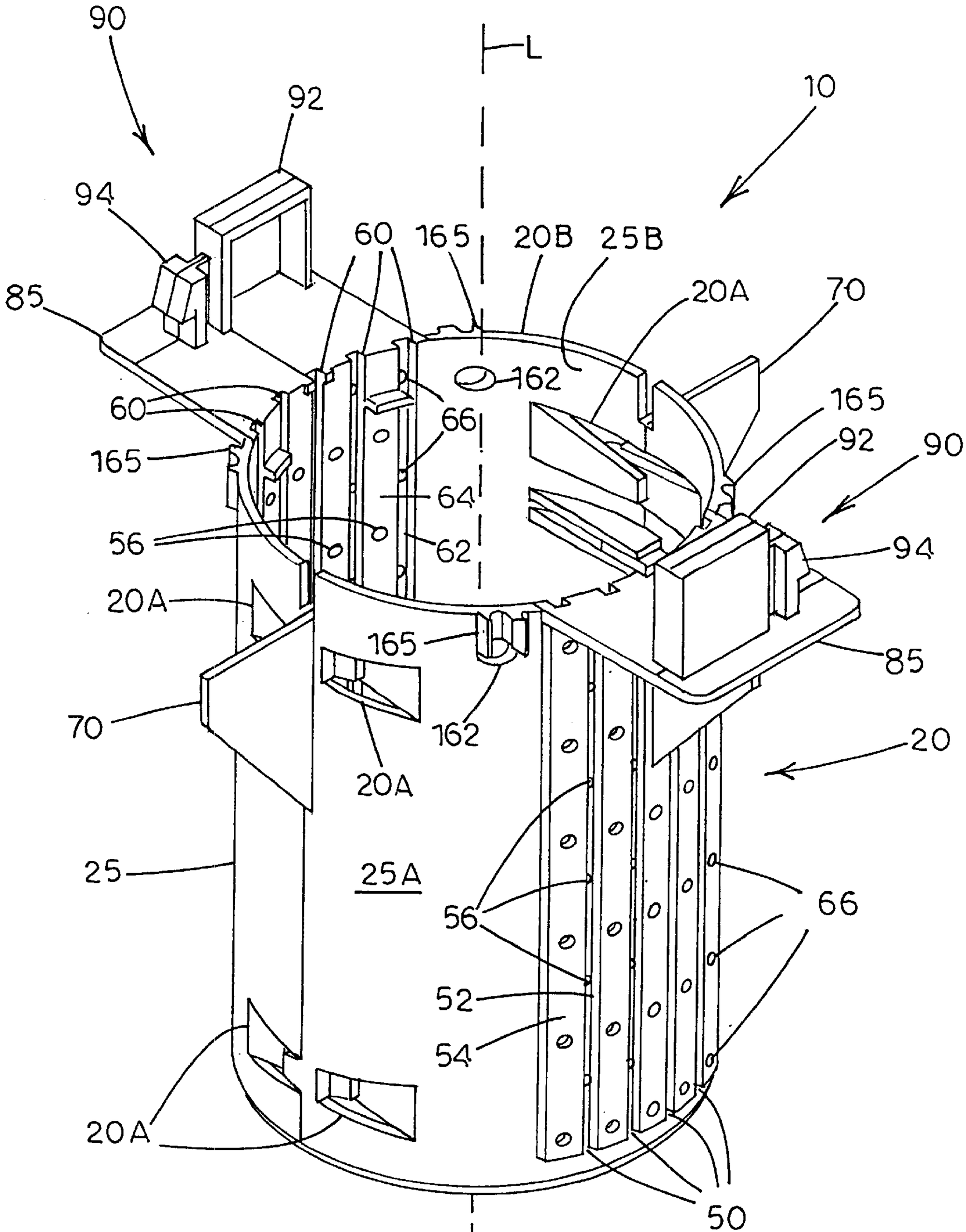

90
92
94
85
60
165
L
20B
25B
10
20A
70
162
66
64
56
62
20
25
25A
52
54
50

Fig.2

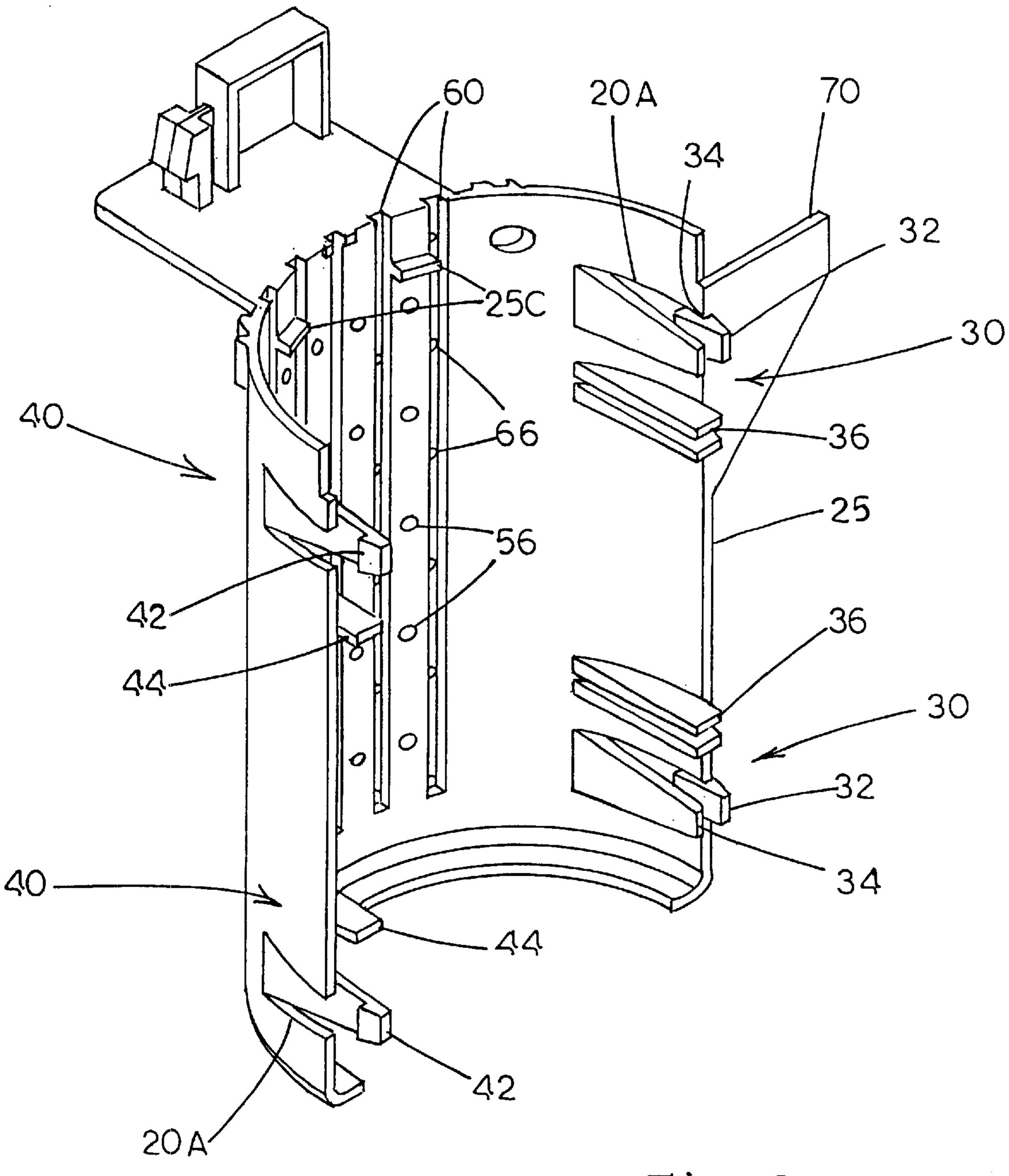


Fig.2A

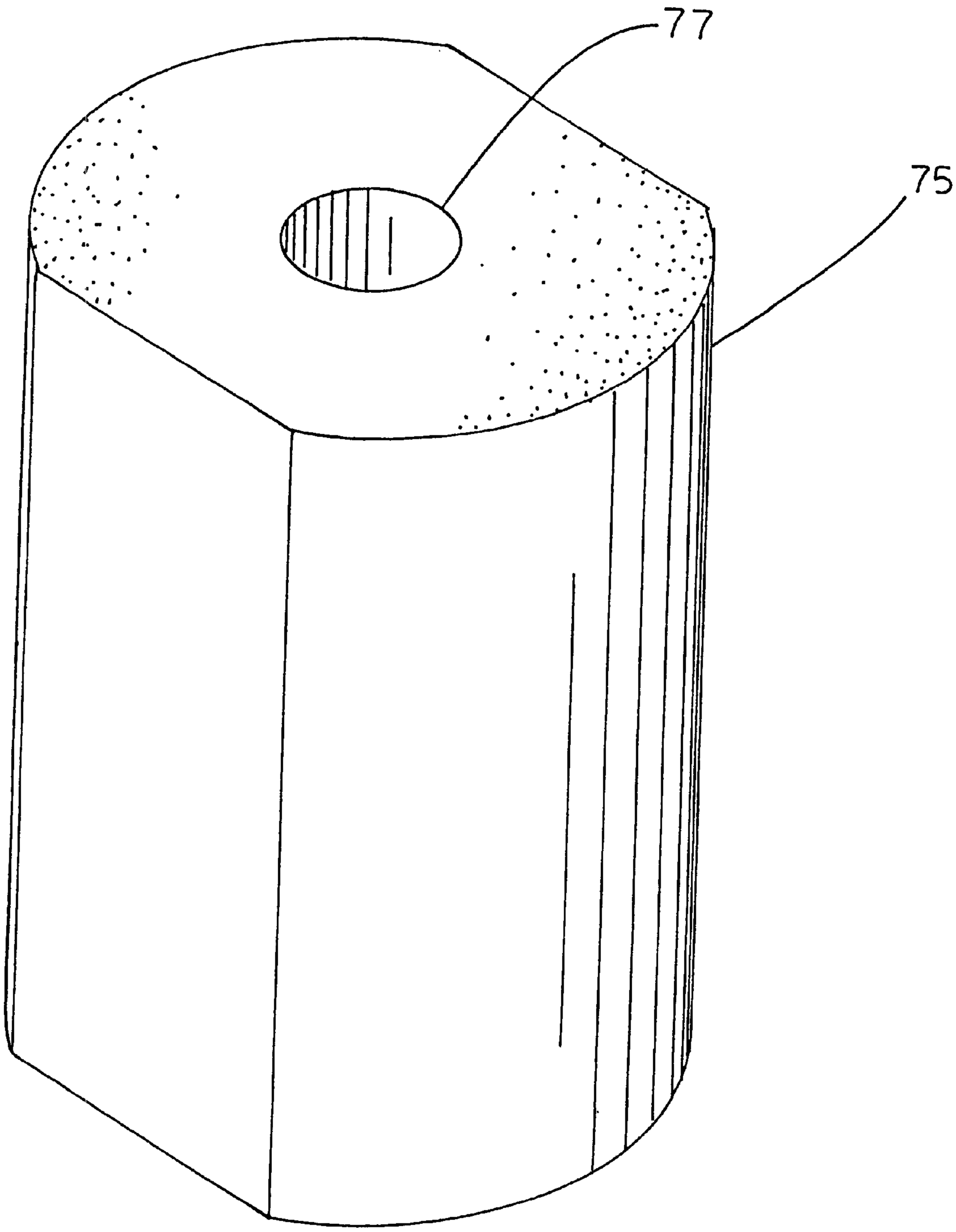


Fig. 3

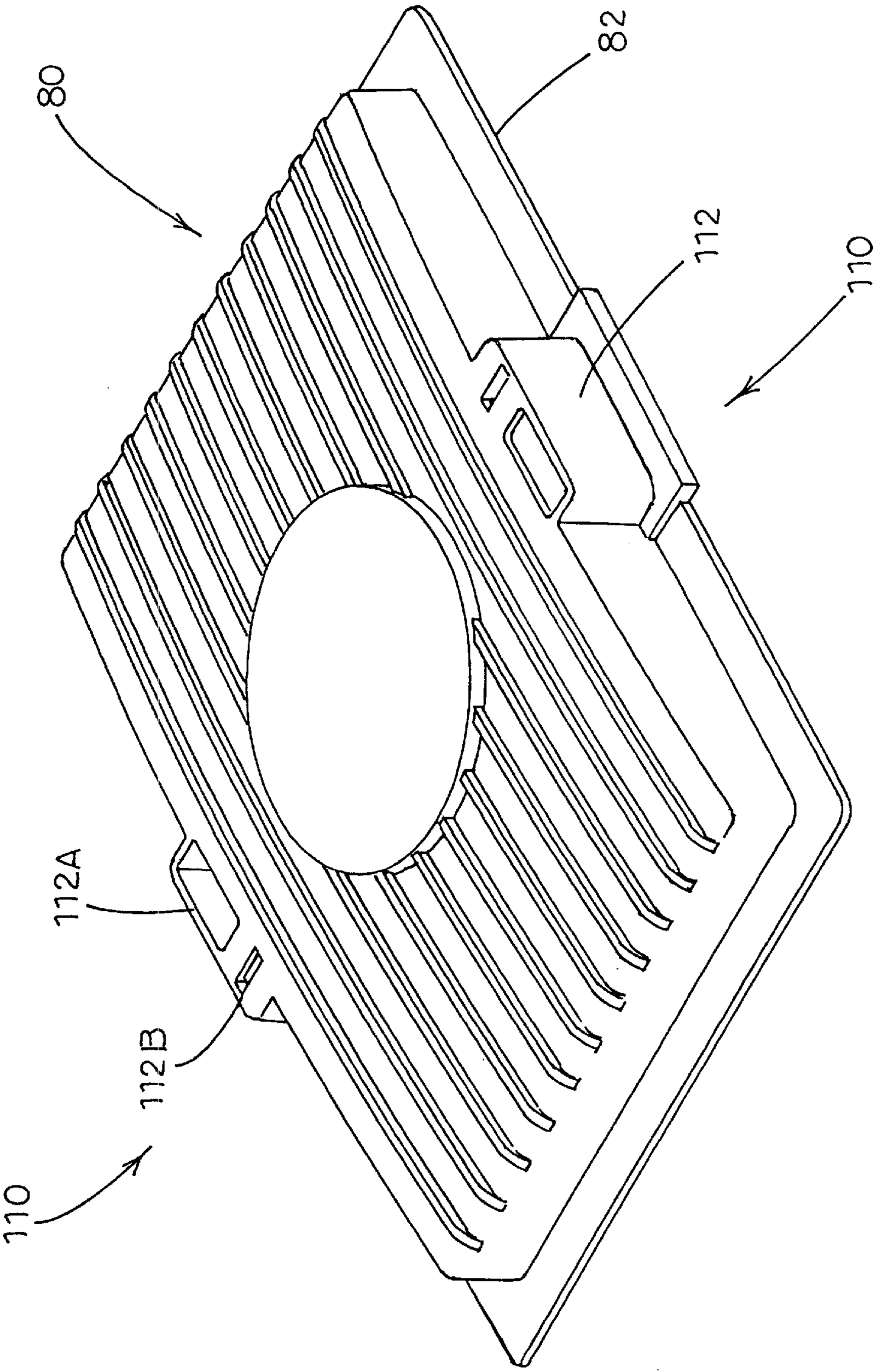


FIG 4A

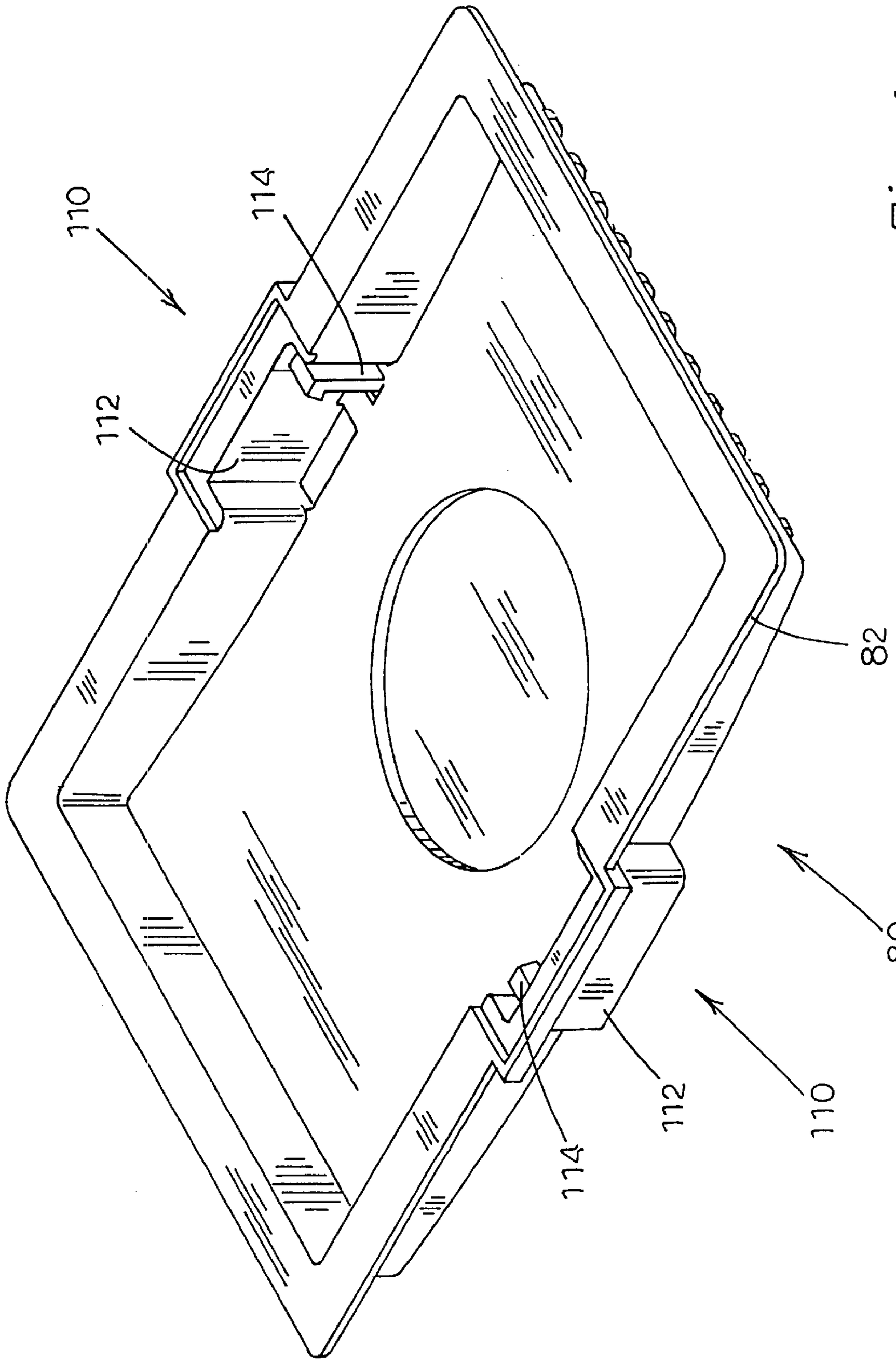


FIG. 4B

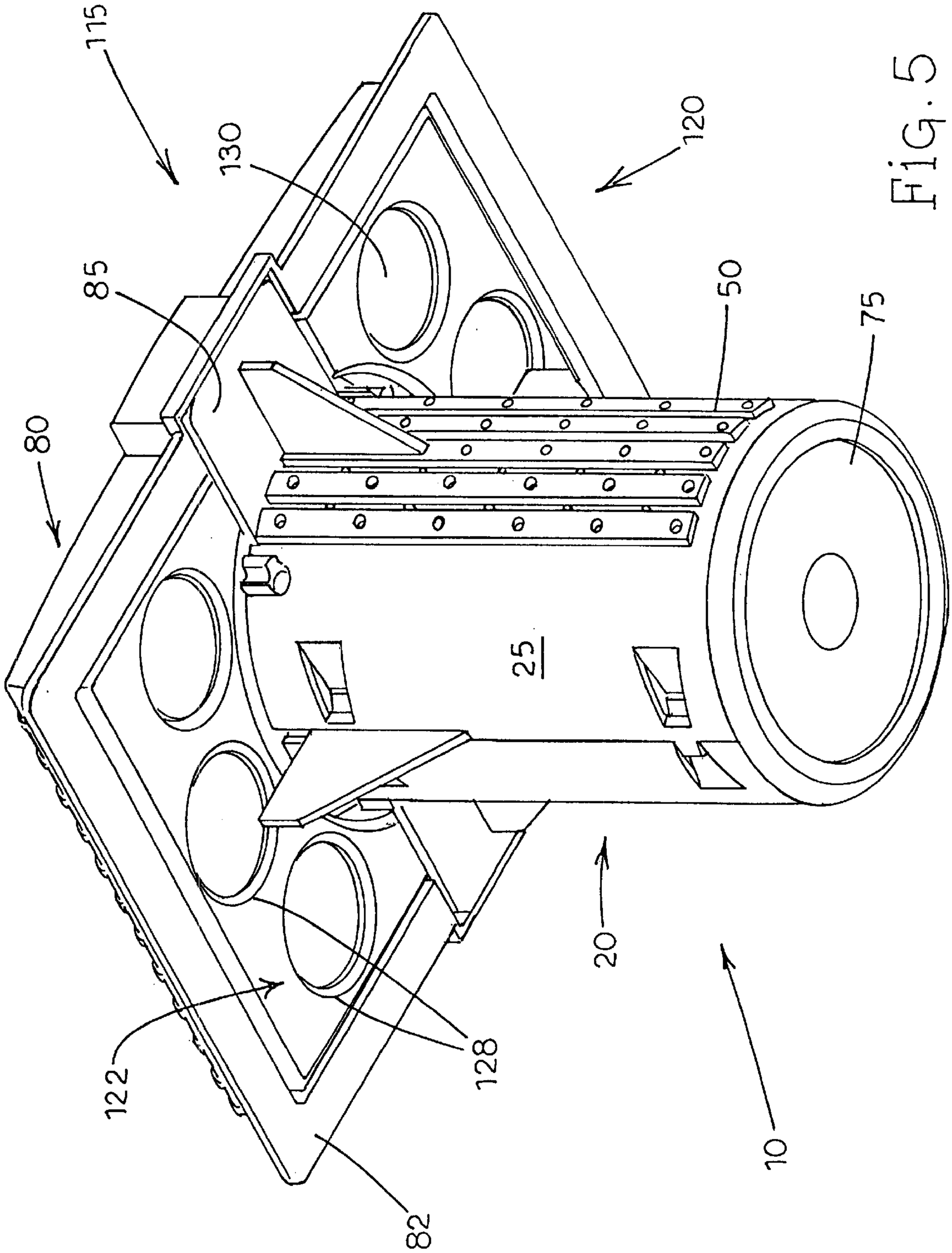


FiG. 5

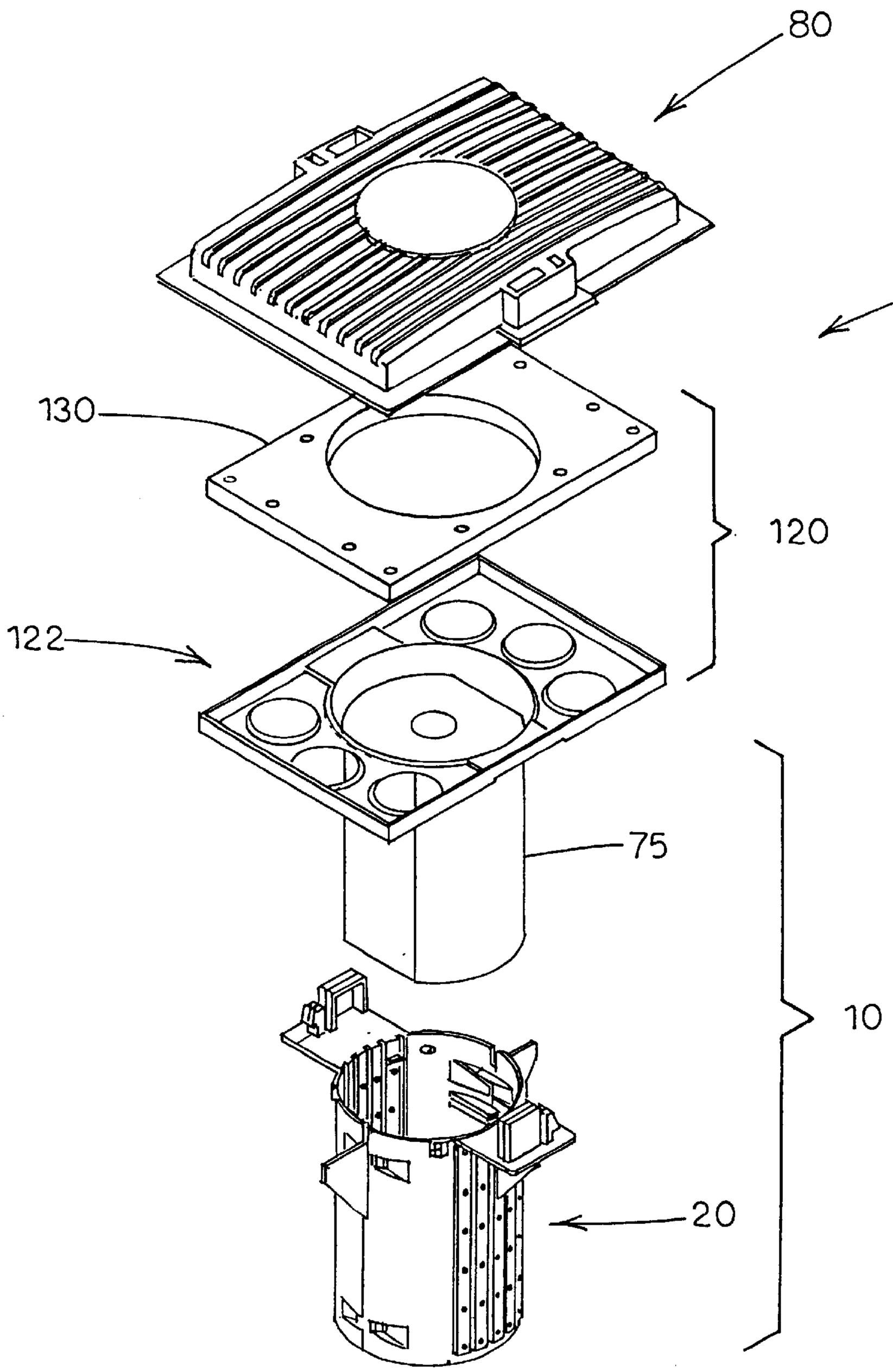


Fig.6

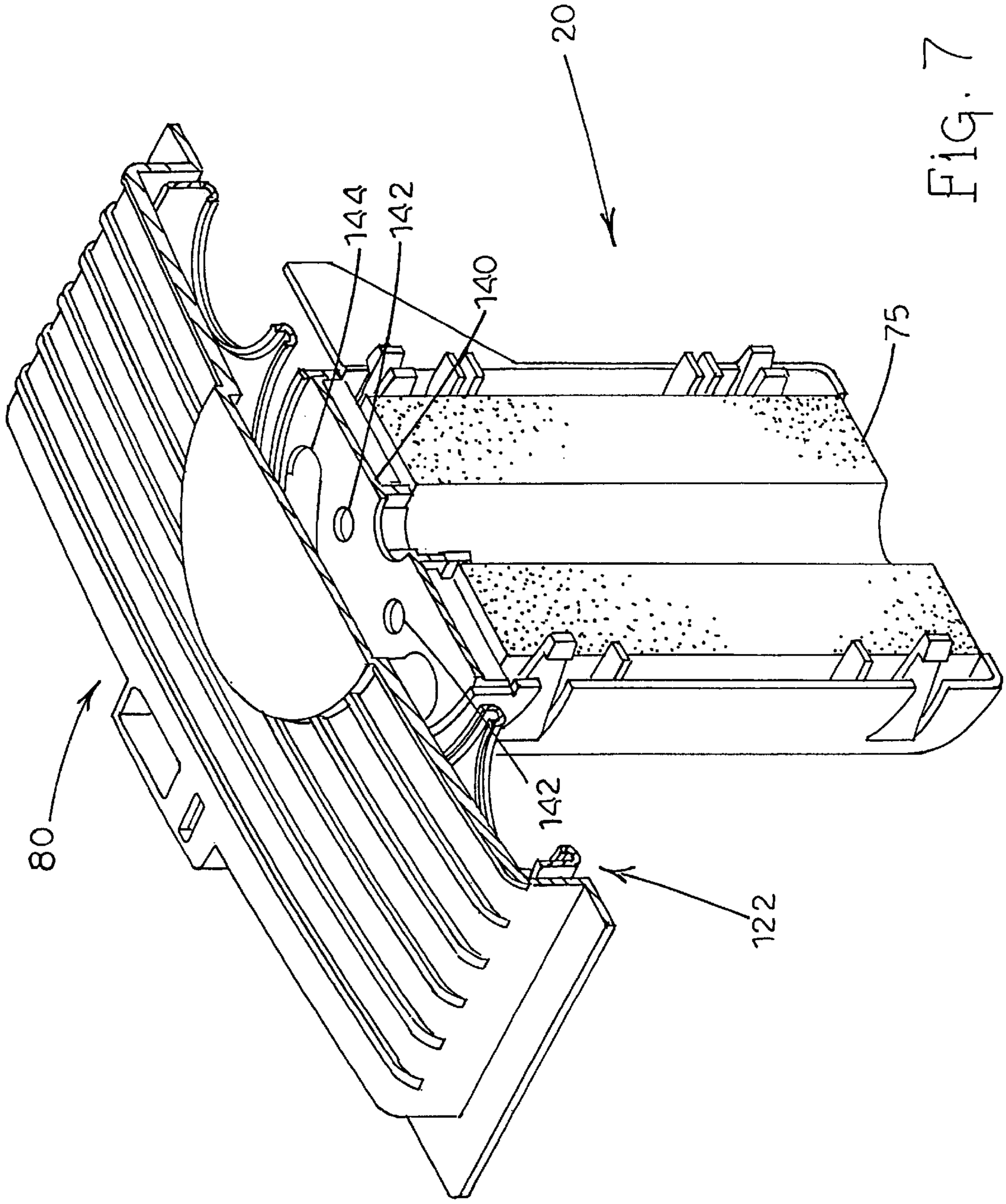


FIG. 7

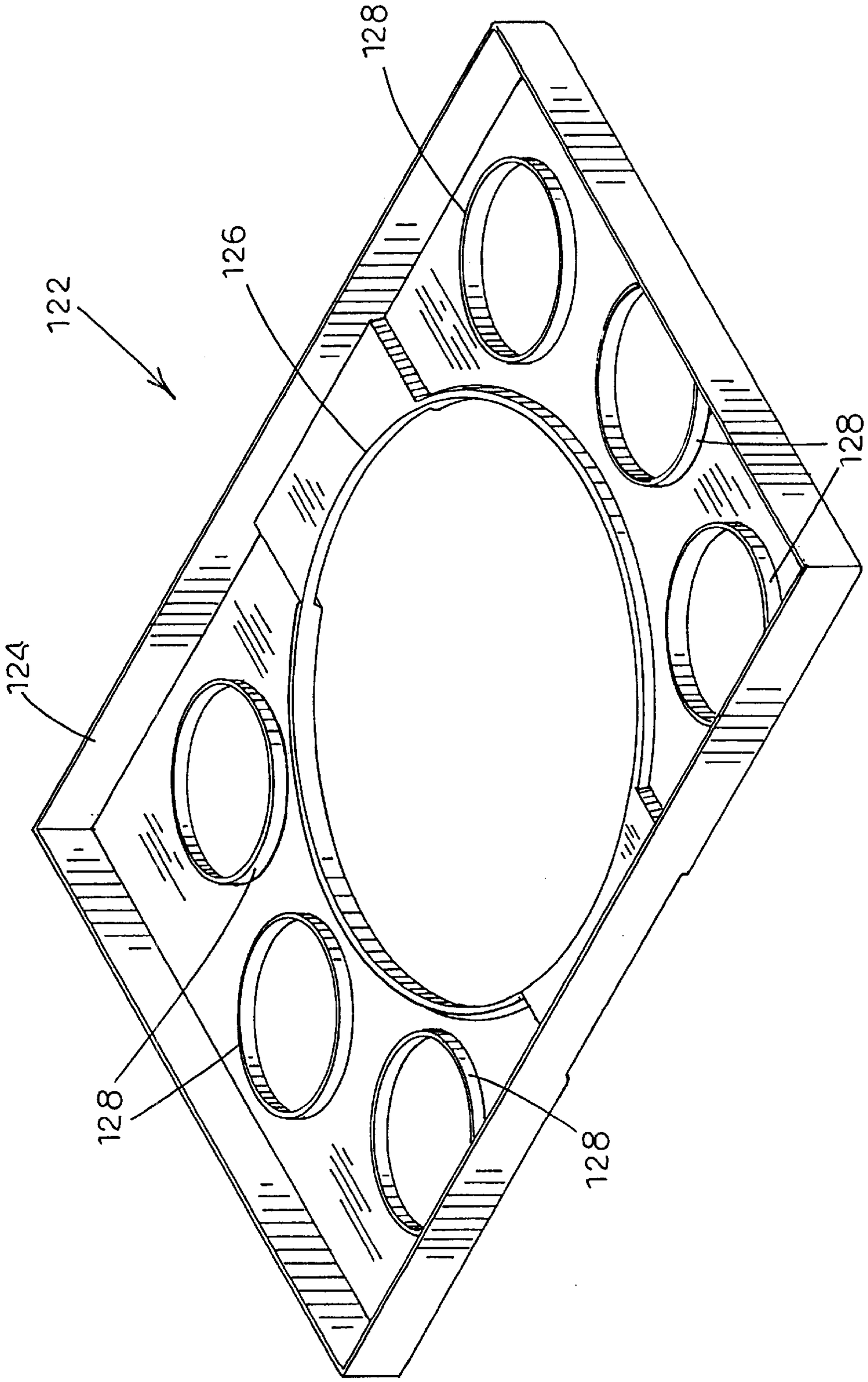


Fig. 8A

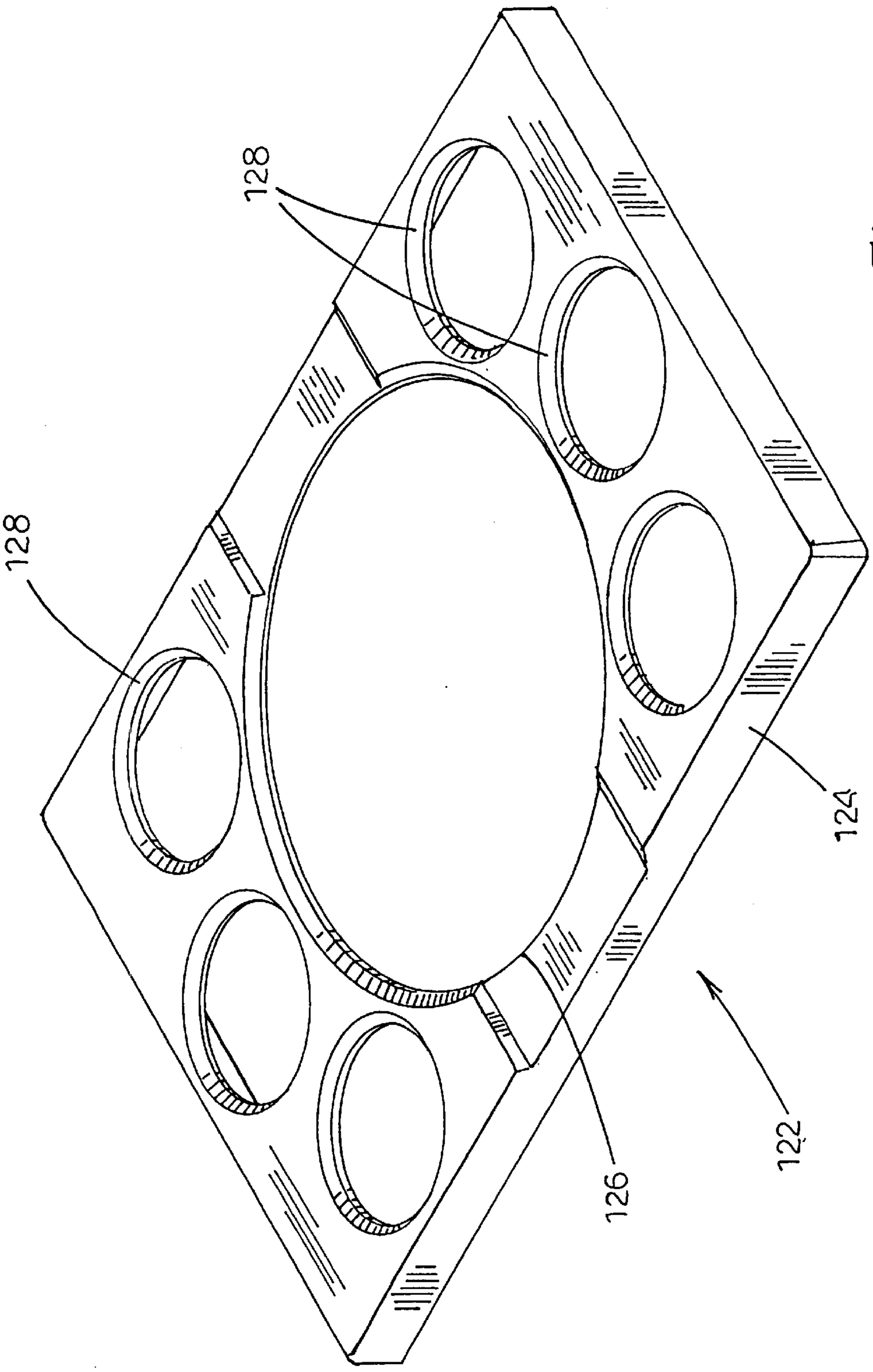


Fig. 8B

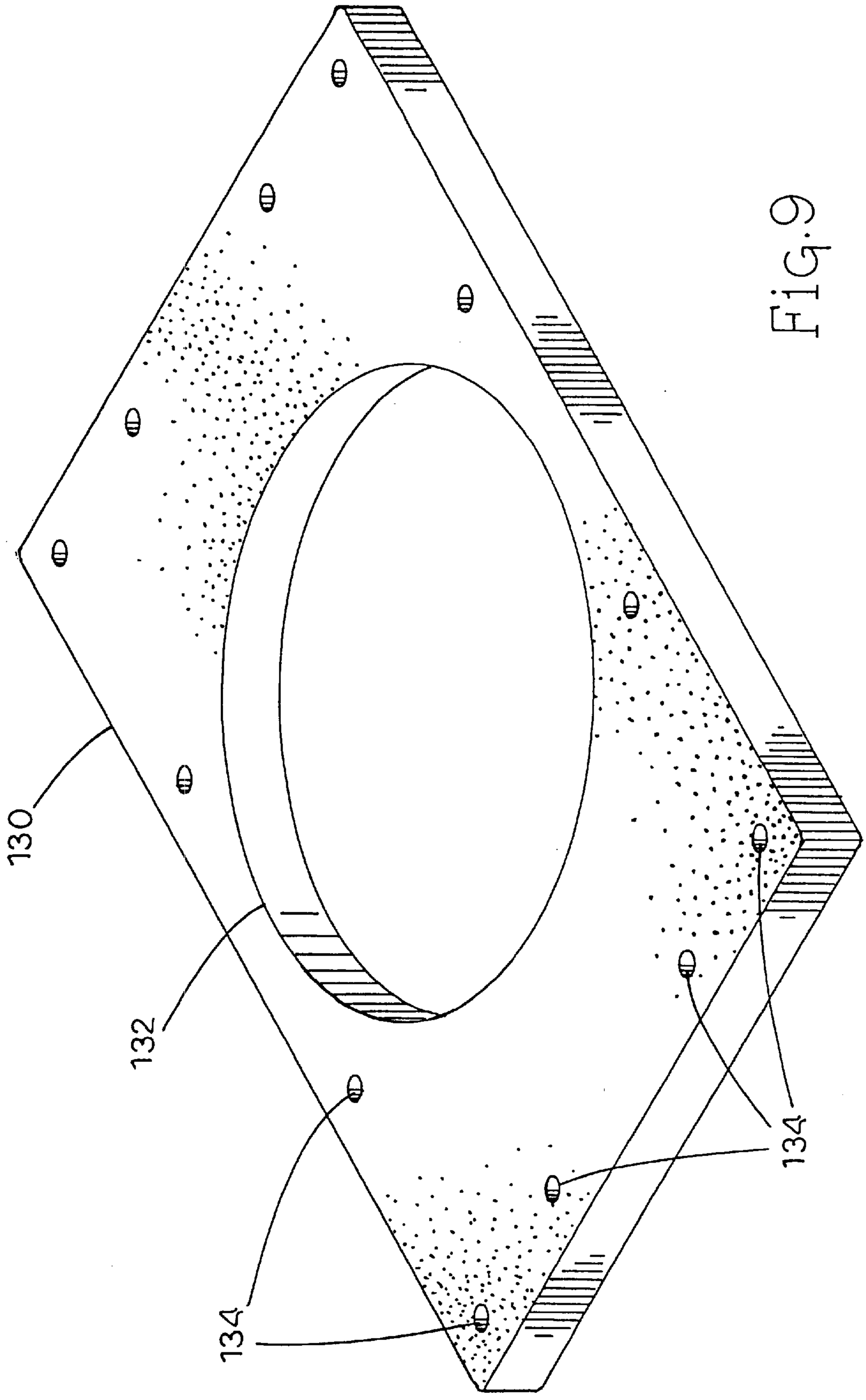


Fig. 6

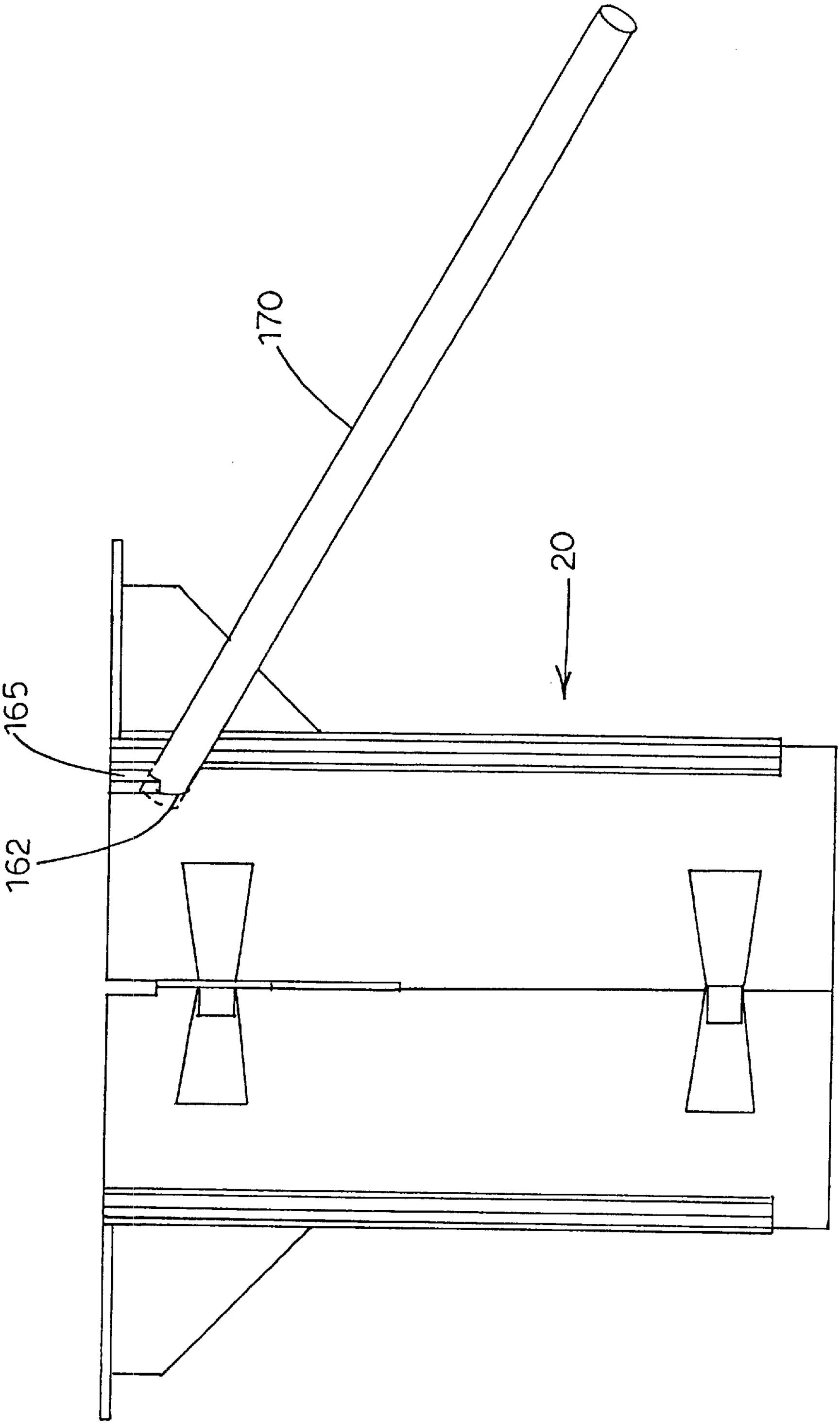


FIG. 10

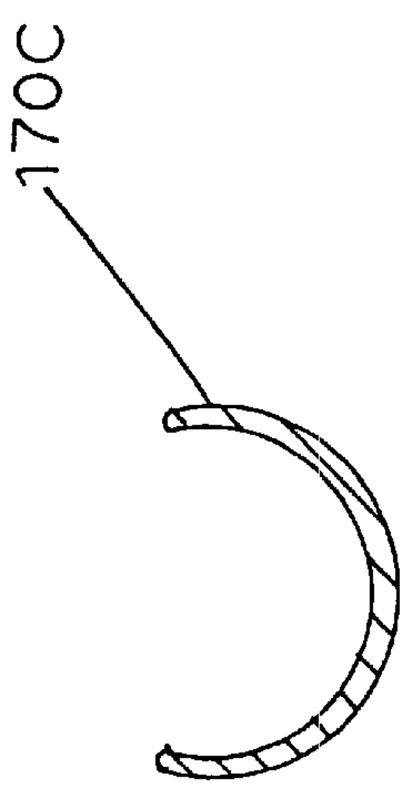


FIG. 11C

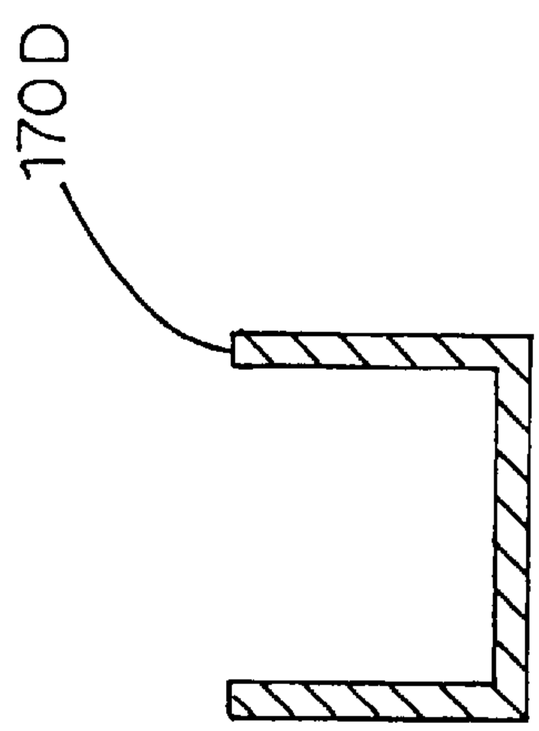


FIG. 11D

FIG. 11A

FIG. 11B

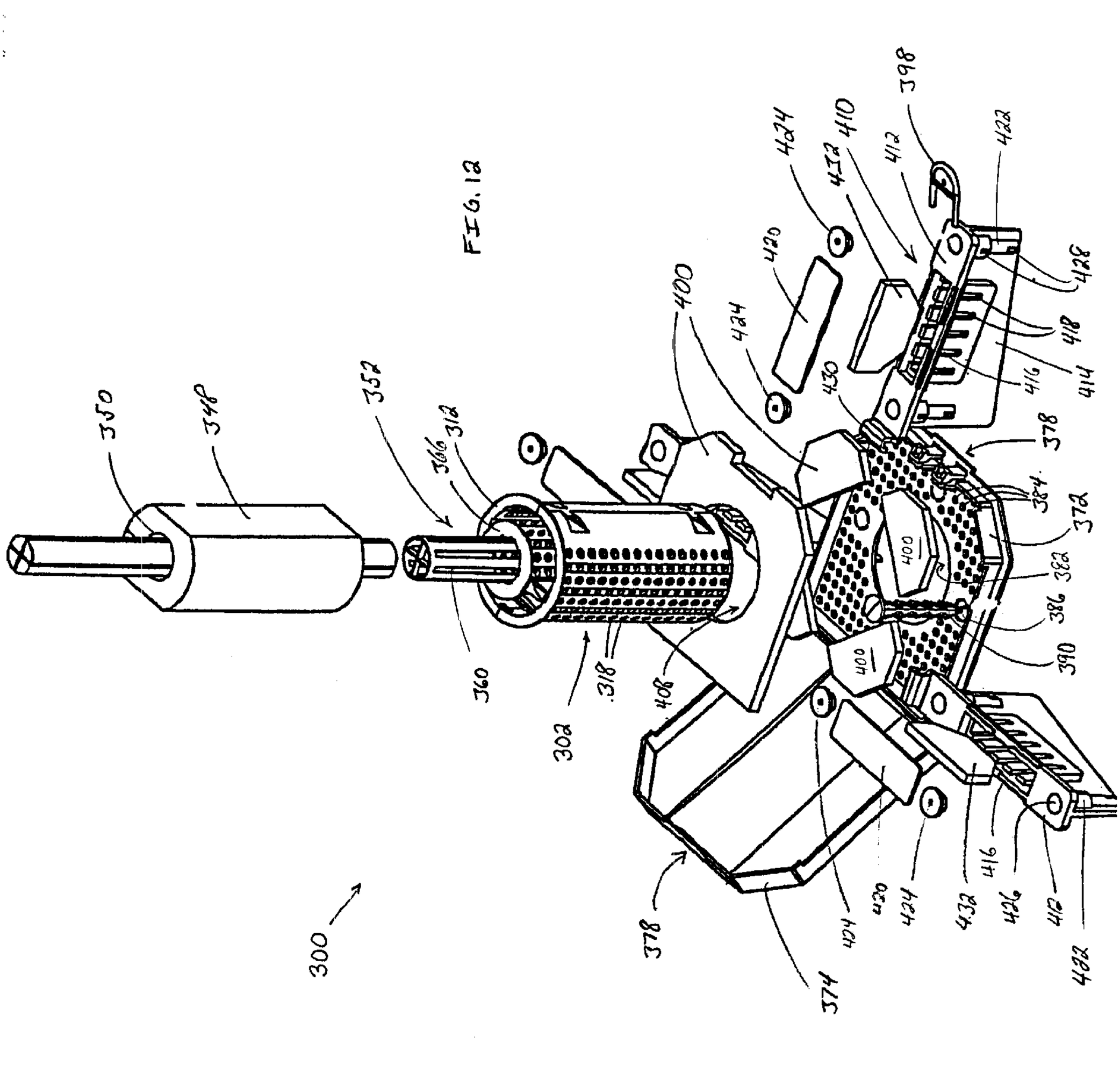

300
302
304
306
308
310
312
314
316
318
320
322
324
326
328
330
332
334
336
338
340
342
344
346
348
350
352
354
356
358
360
362
364
366
368
370
372
374
376
378
380
382
384
386
388
390
392
394
396
398
400
402
404
406
408
410
412
414
416
418
420
422
424
426
428
430
432
434

FIG. 12

FIG. 13A

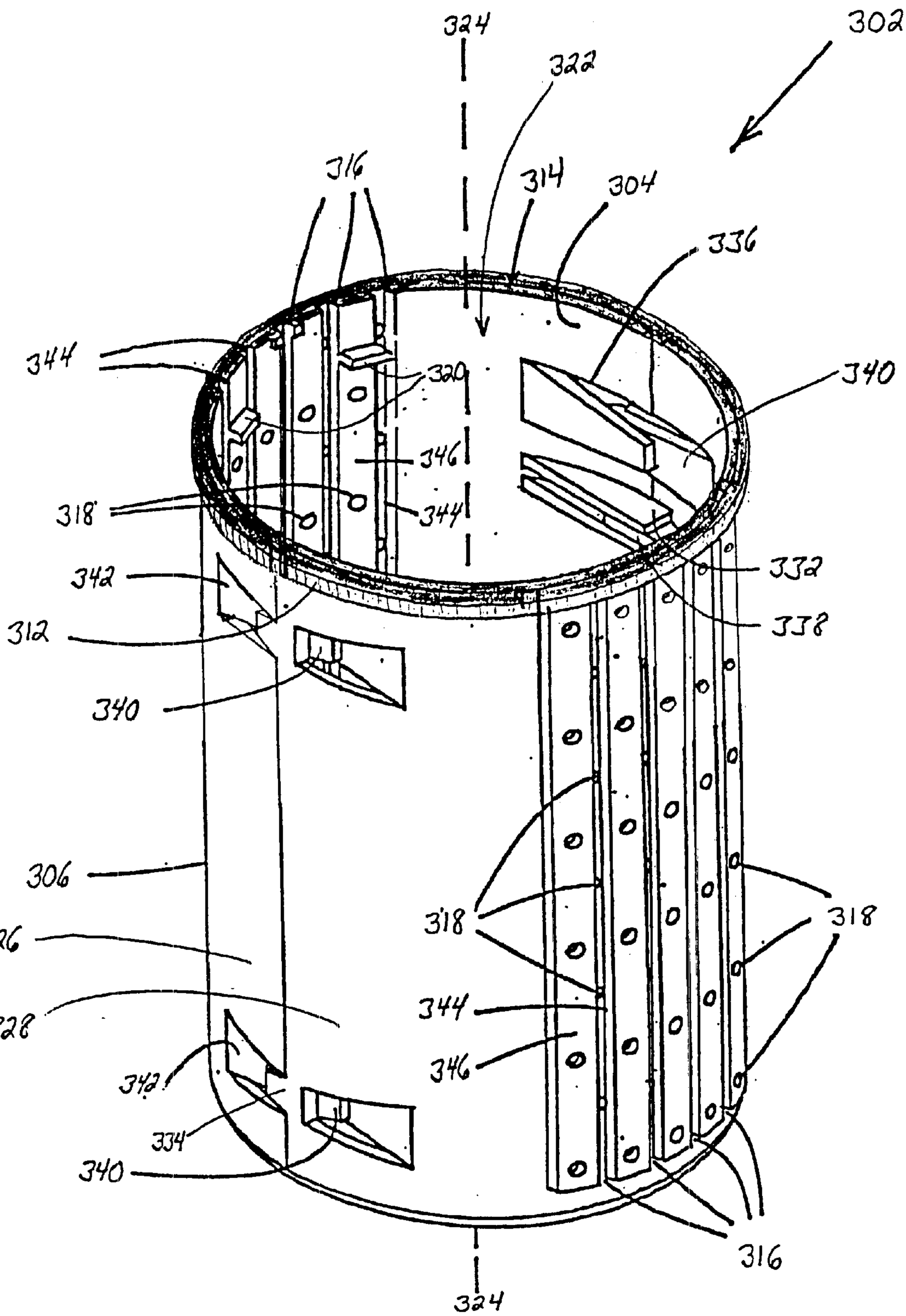
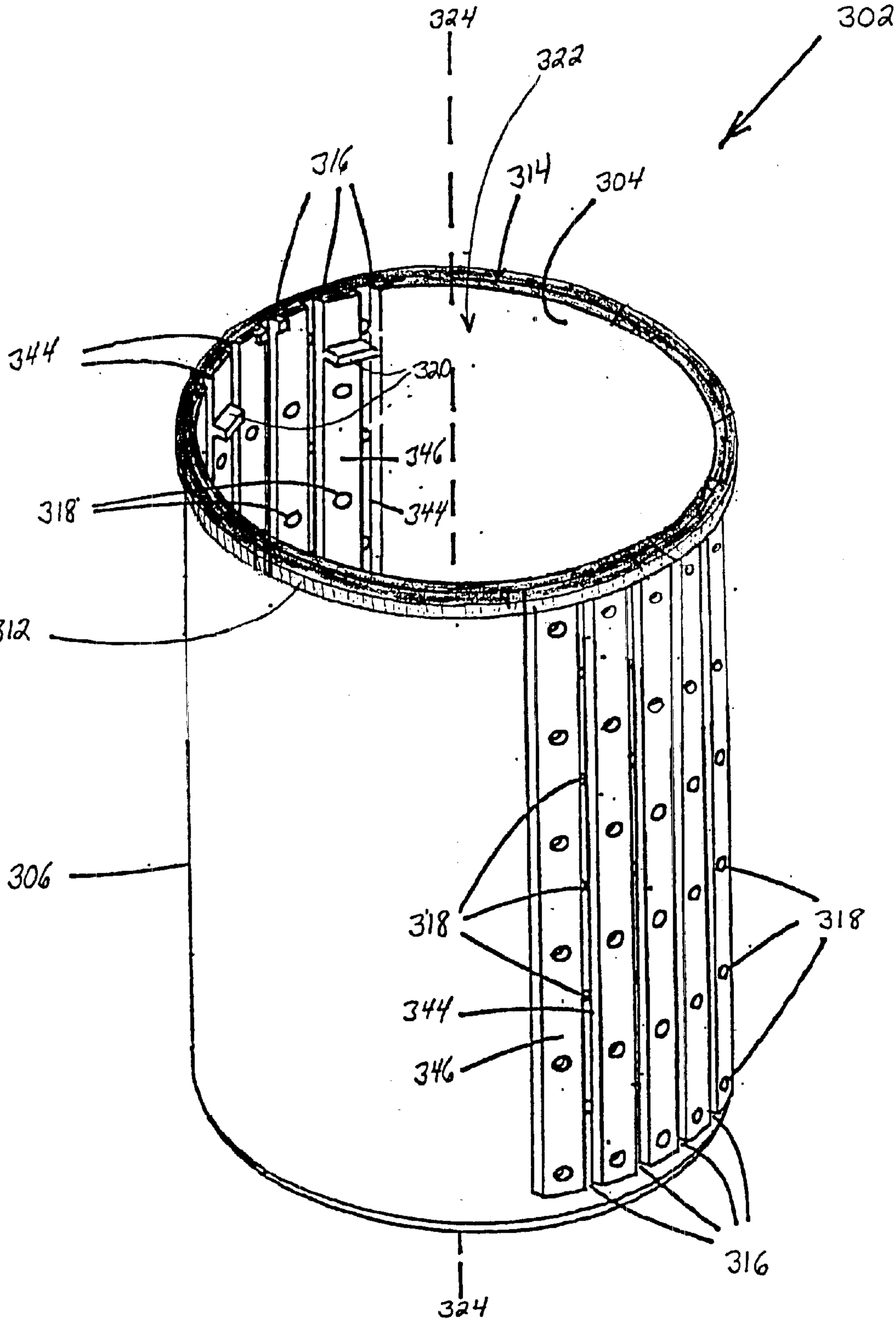

324
302
322
316
314
304
336
344
320
340
346
318
344
342
332
312
338
340
306
318
326
318
344
328
346
342
334
340
316
324

FIG. 13B


324
302
322
316
314
304
344
320
346
318
344
312
306
318
318
344
346
316
324

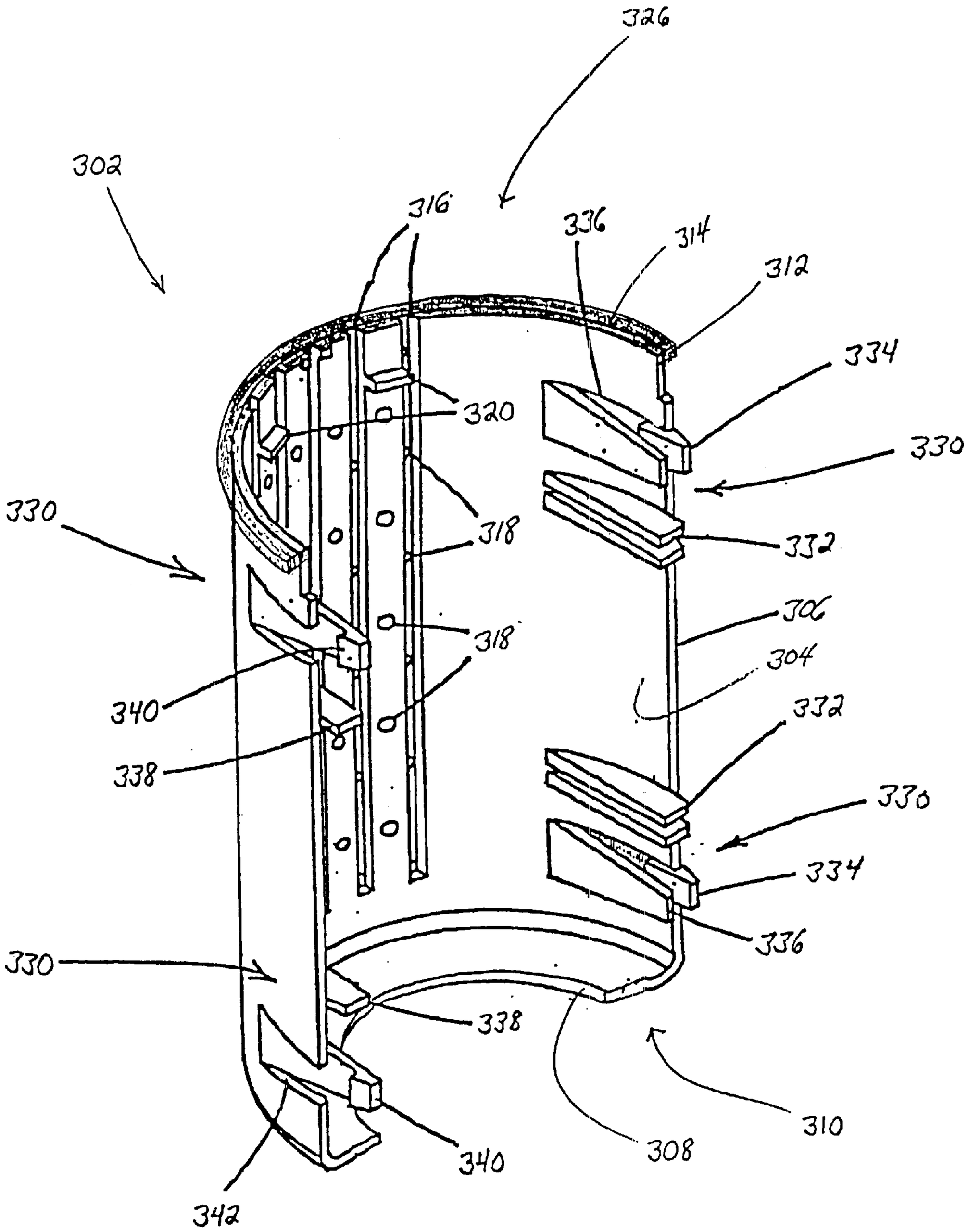

326
302
316
336
314
312
334
320
330
318
330
332
306
318
304
340
332
338
330
334
336
330
338
308
310
340
342

FIG. 14A

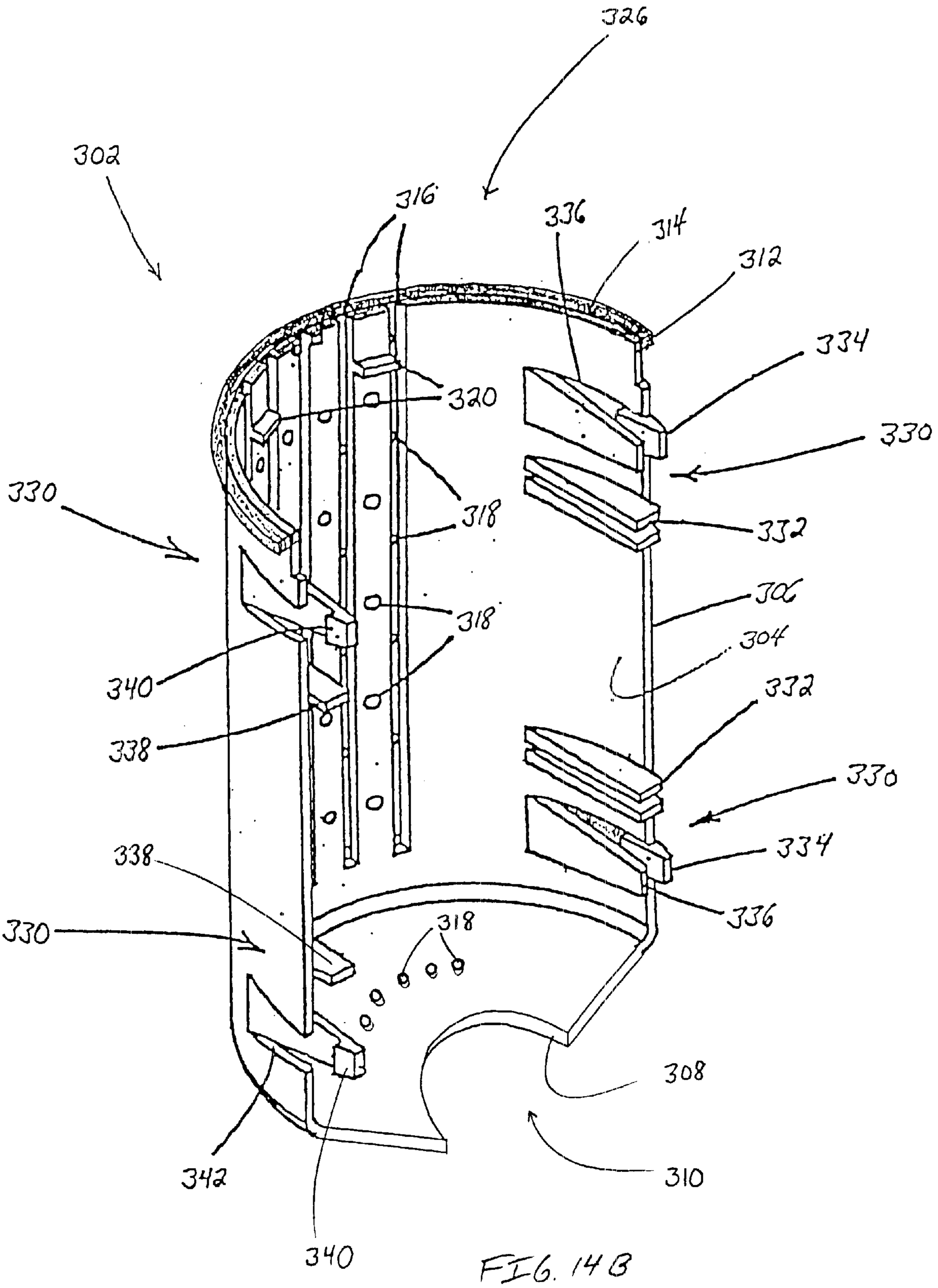

326
302
316
336
314
312
334
320
330
318
332
306
304
340
338
342
310

FIG. 14B

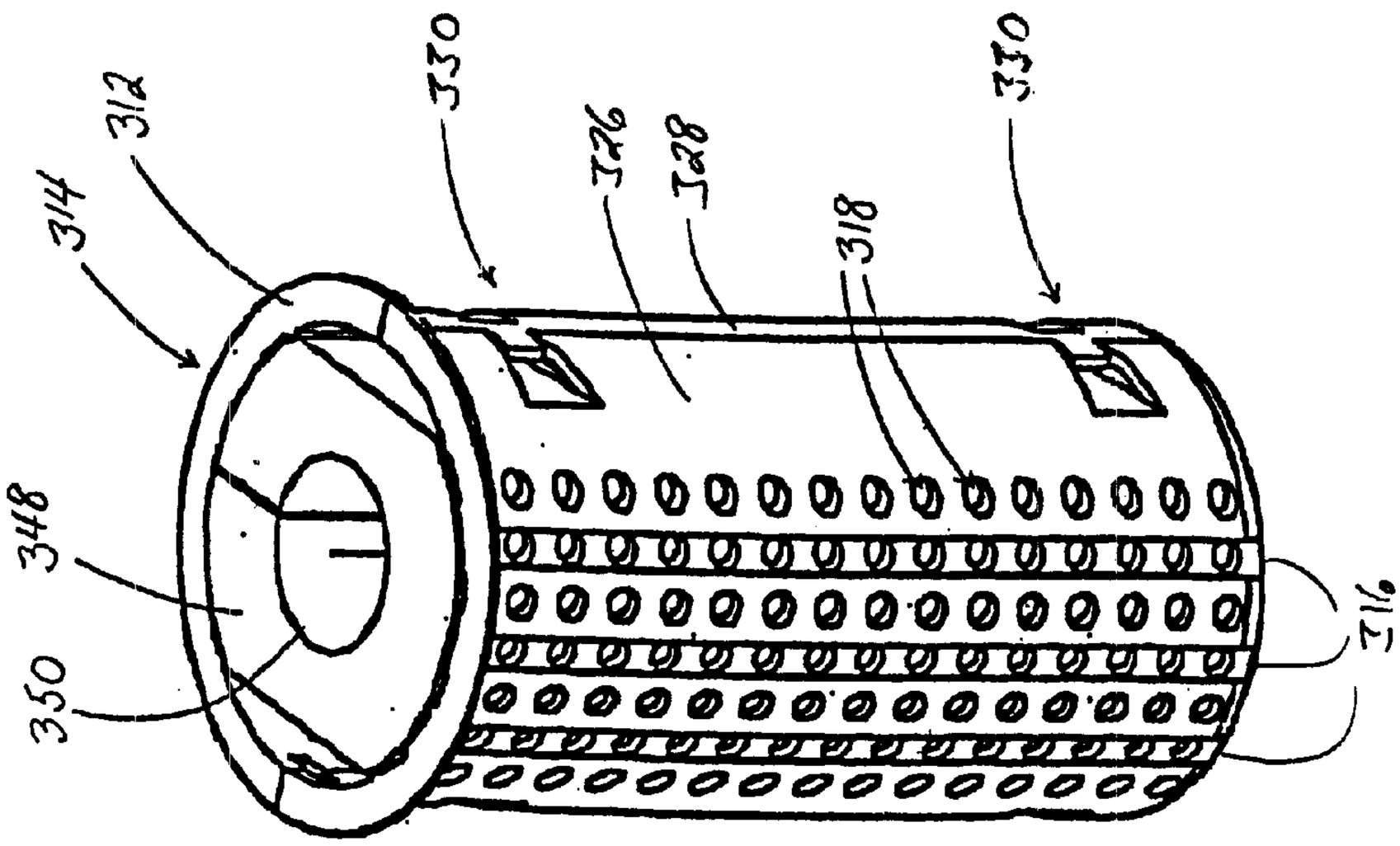


FIG. 15

FIG. 16

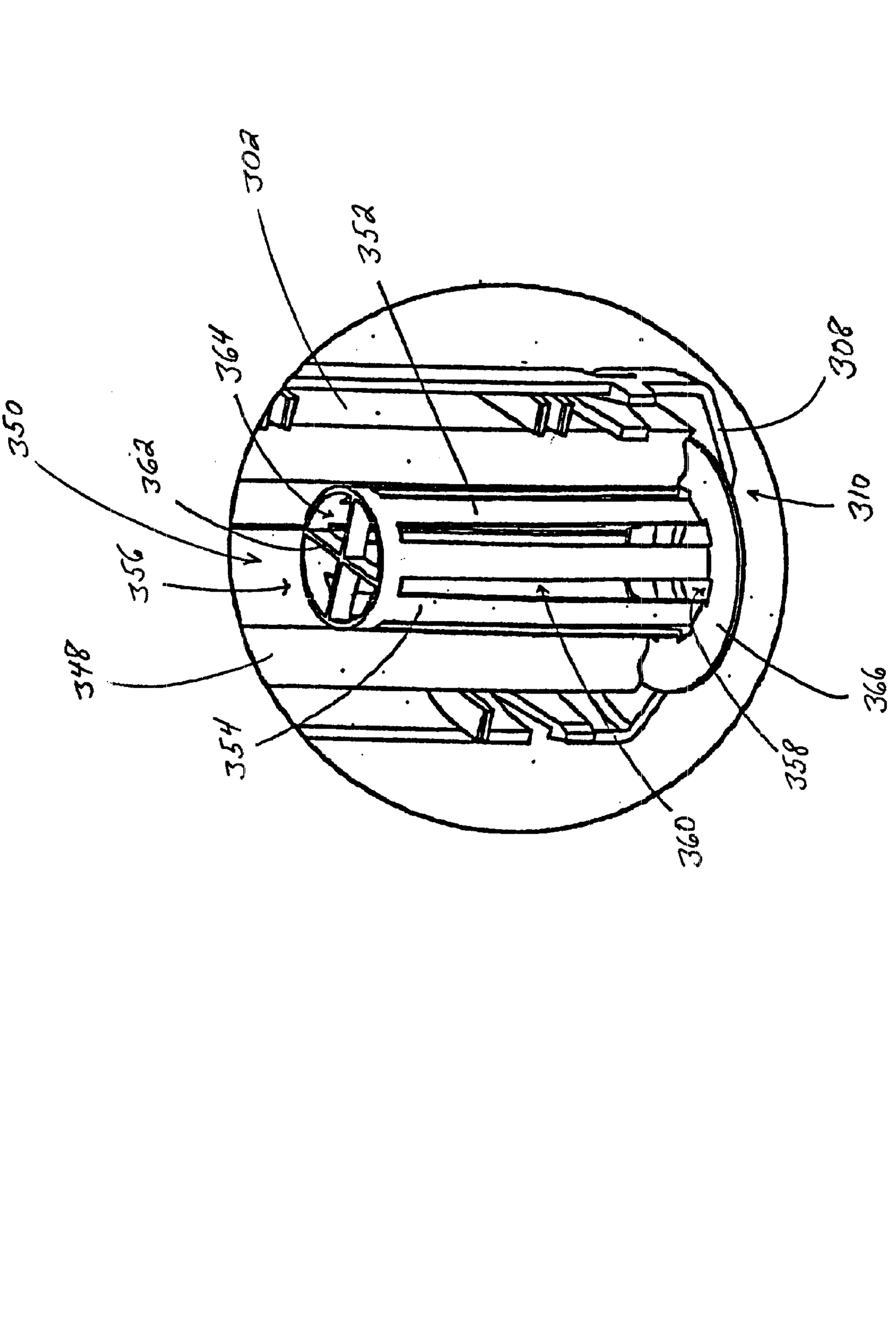
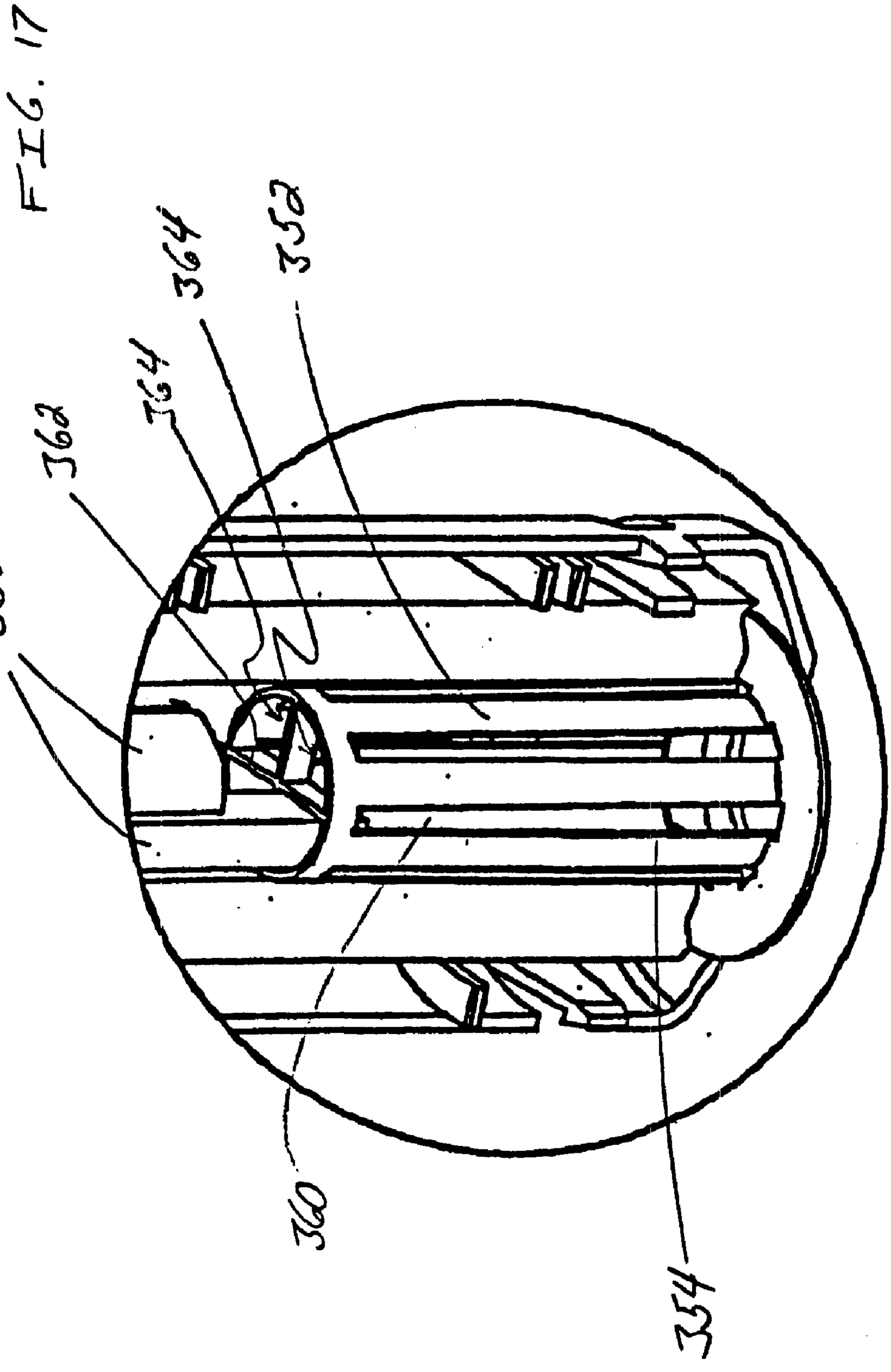


FIG. 17



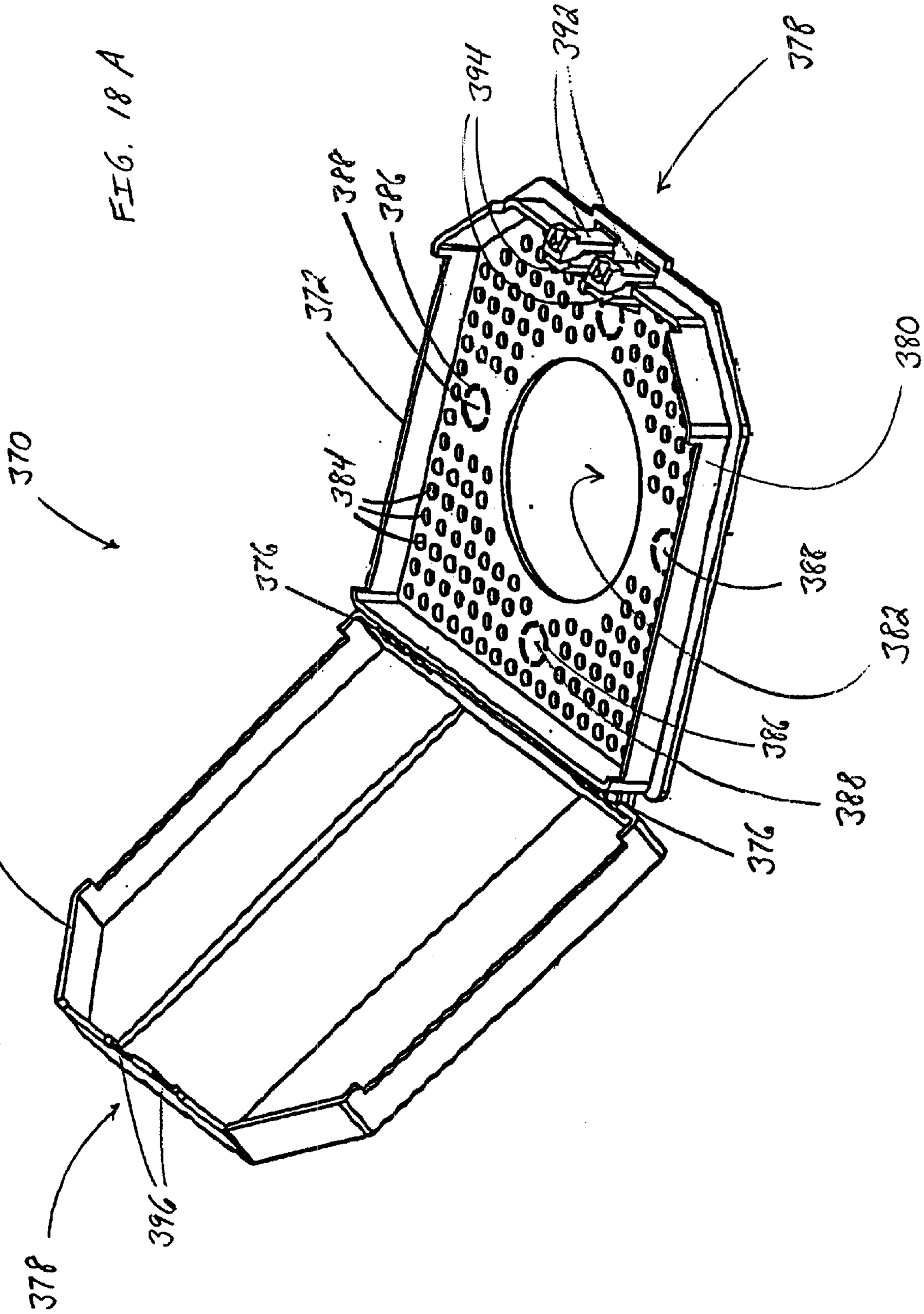


FIG. 18A

FIG. 18B

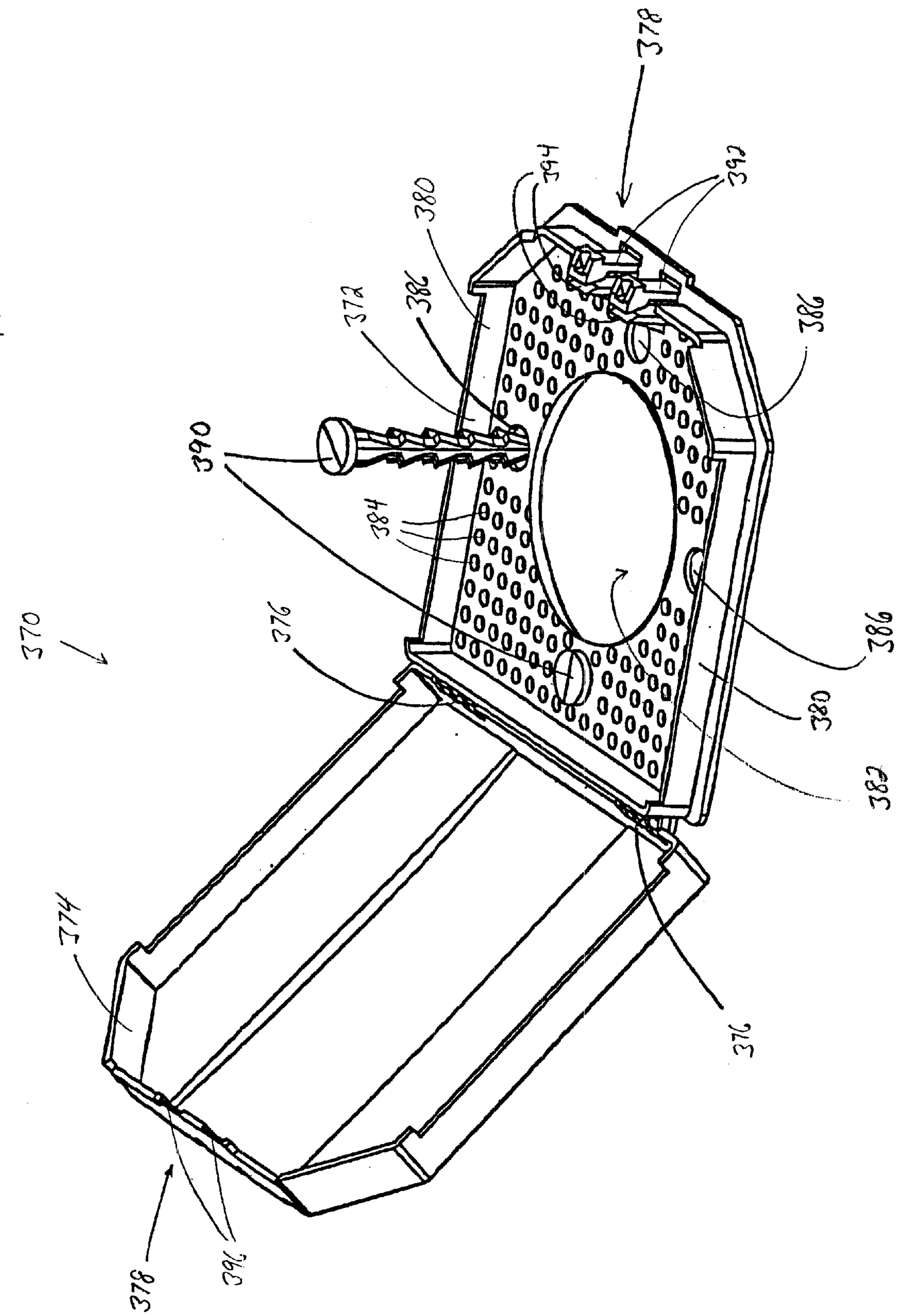
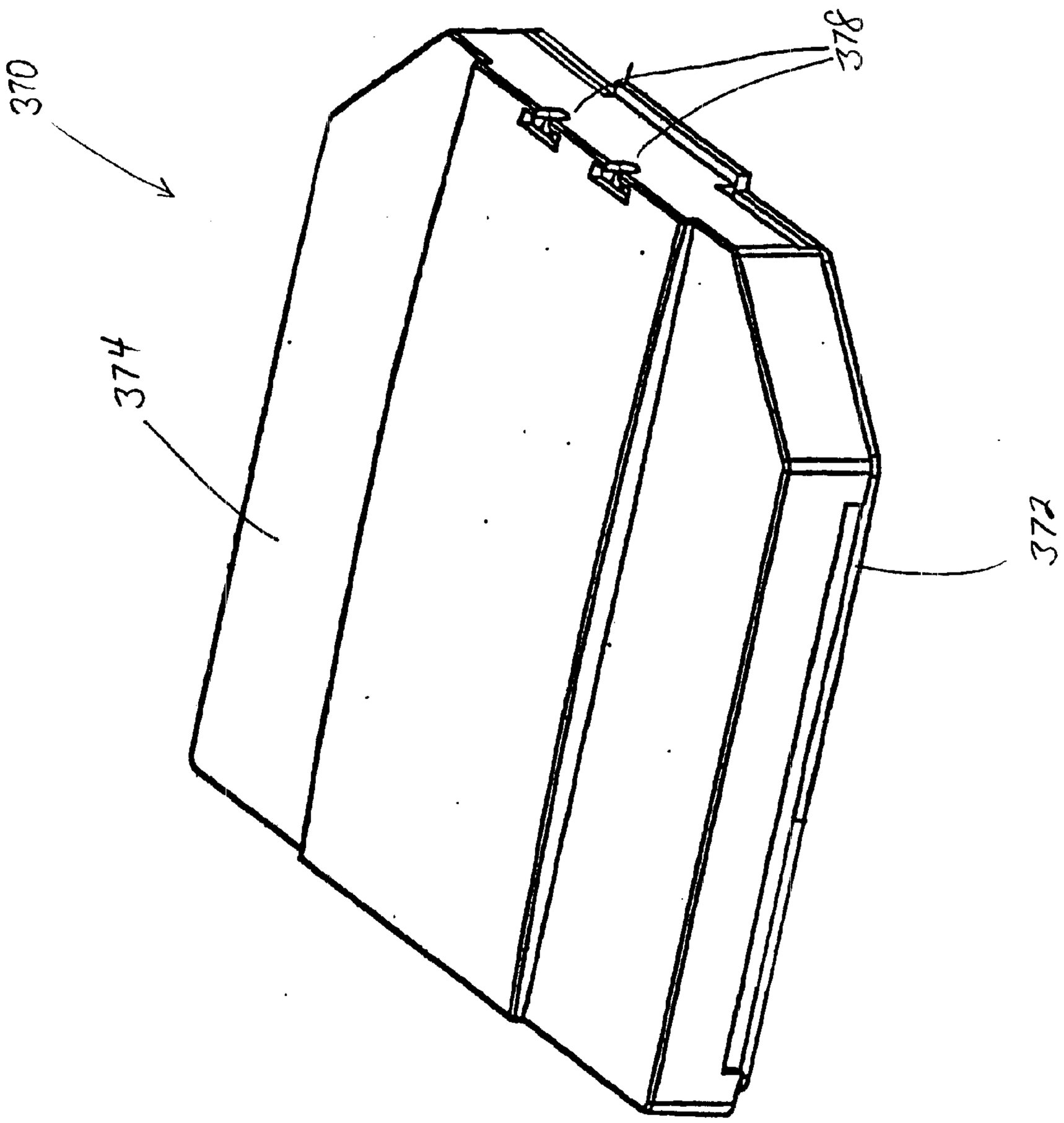

378
394
392
380
386
372
386
390
384
386
370
376
380
382
374
376
378
396

FIG. 18C



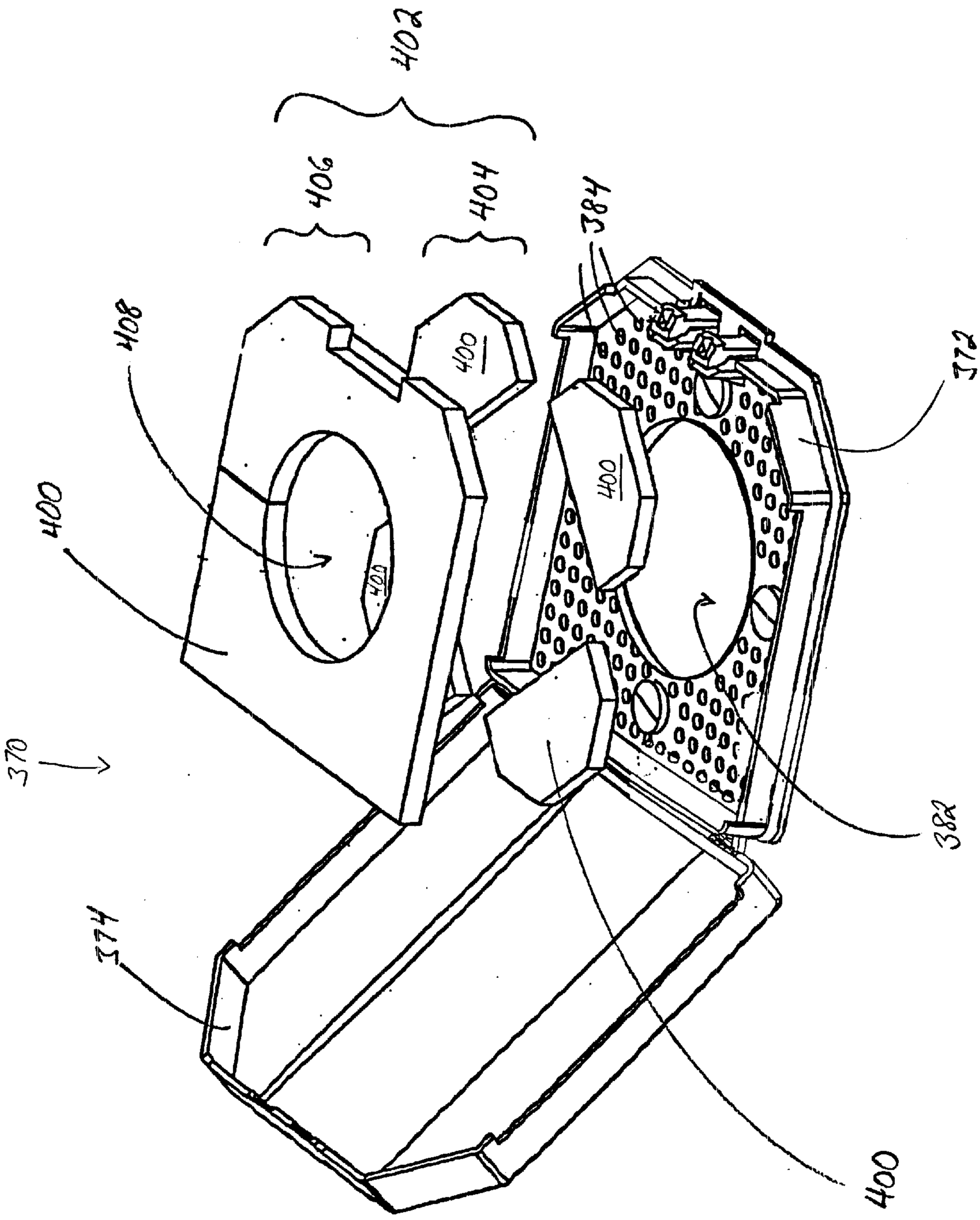


FIG. 19A

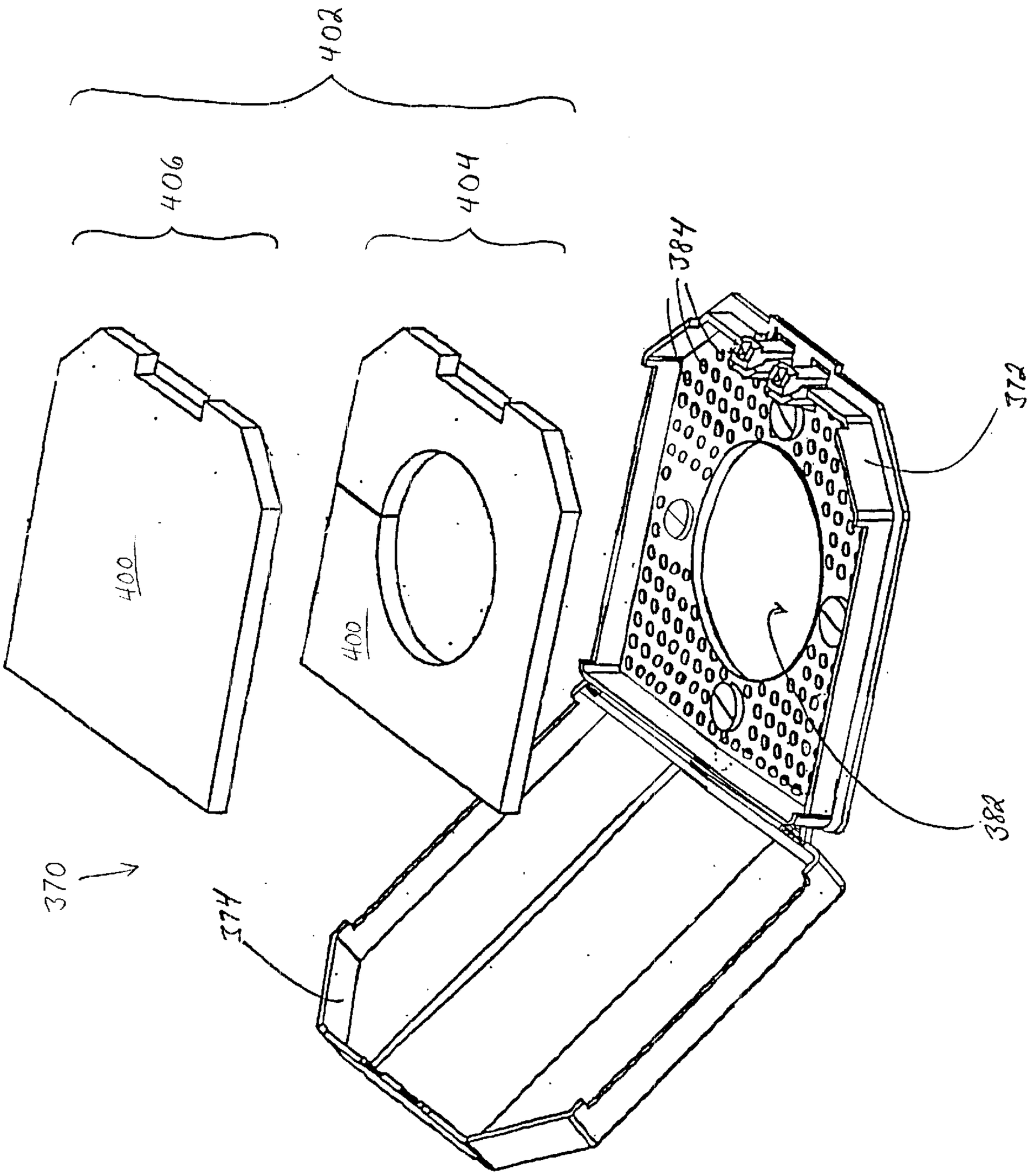
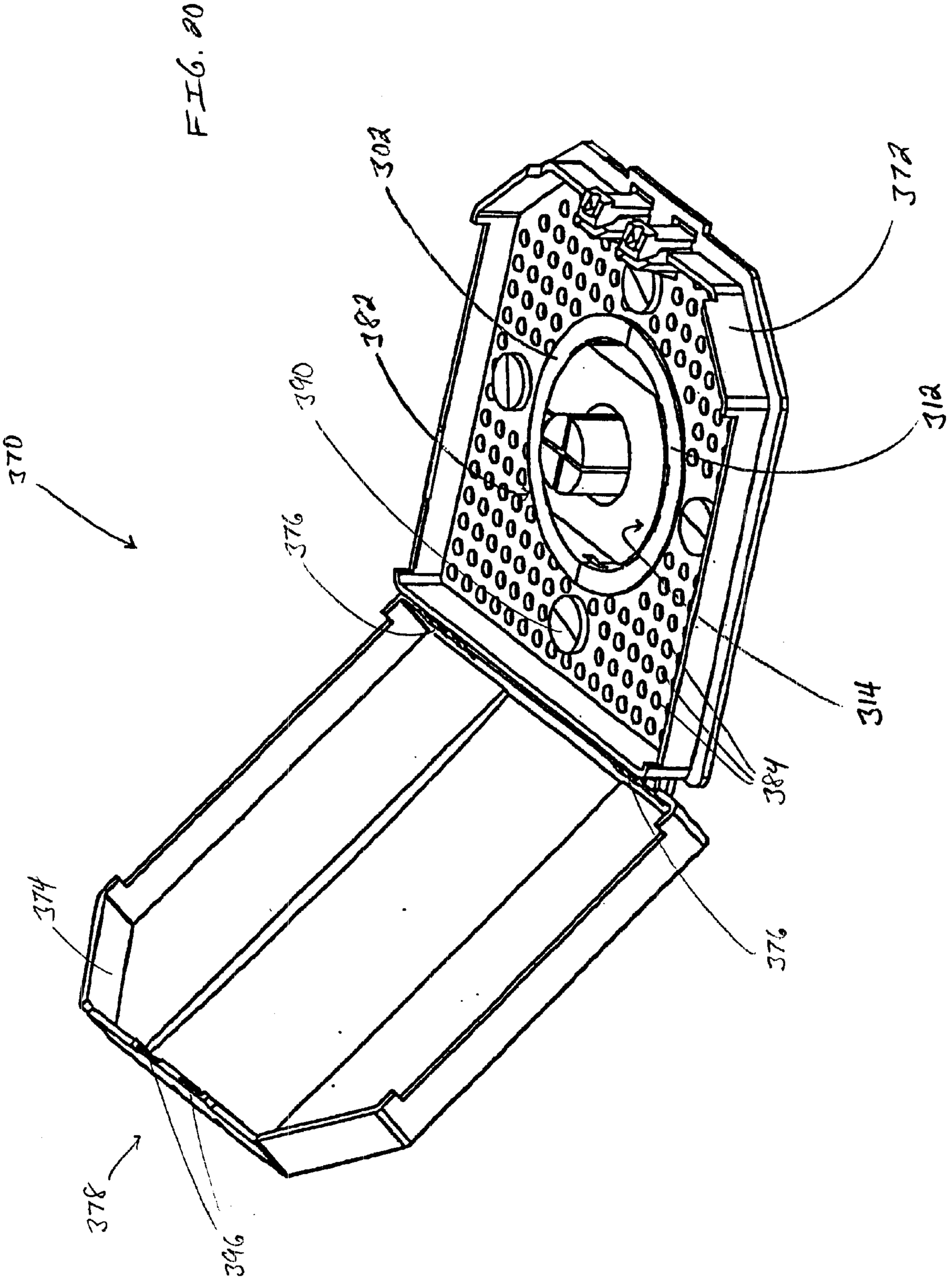


FIG. 19B

FIG. 20



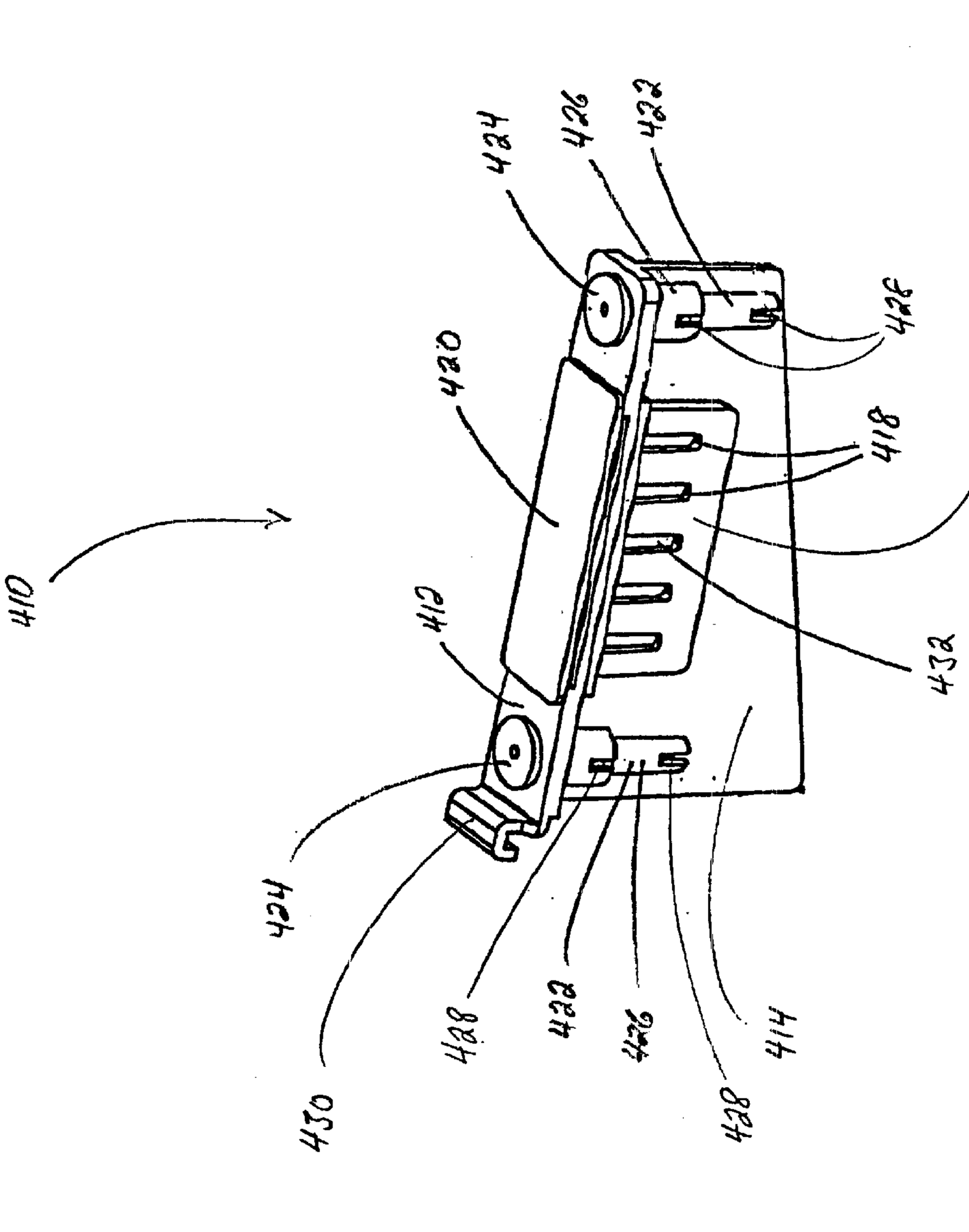


FIG. 21

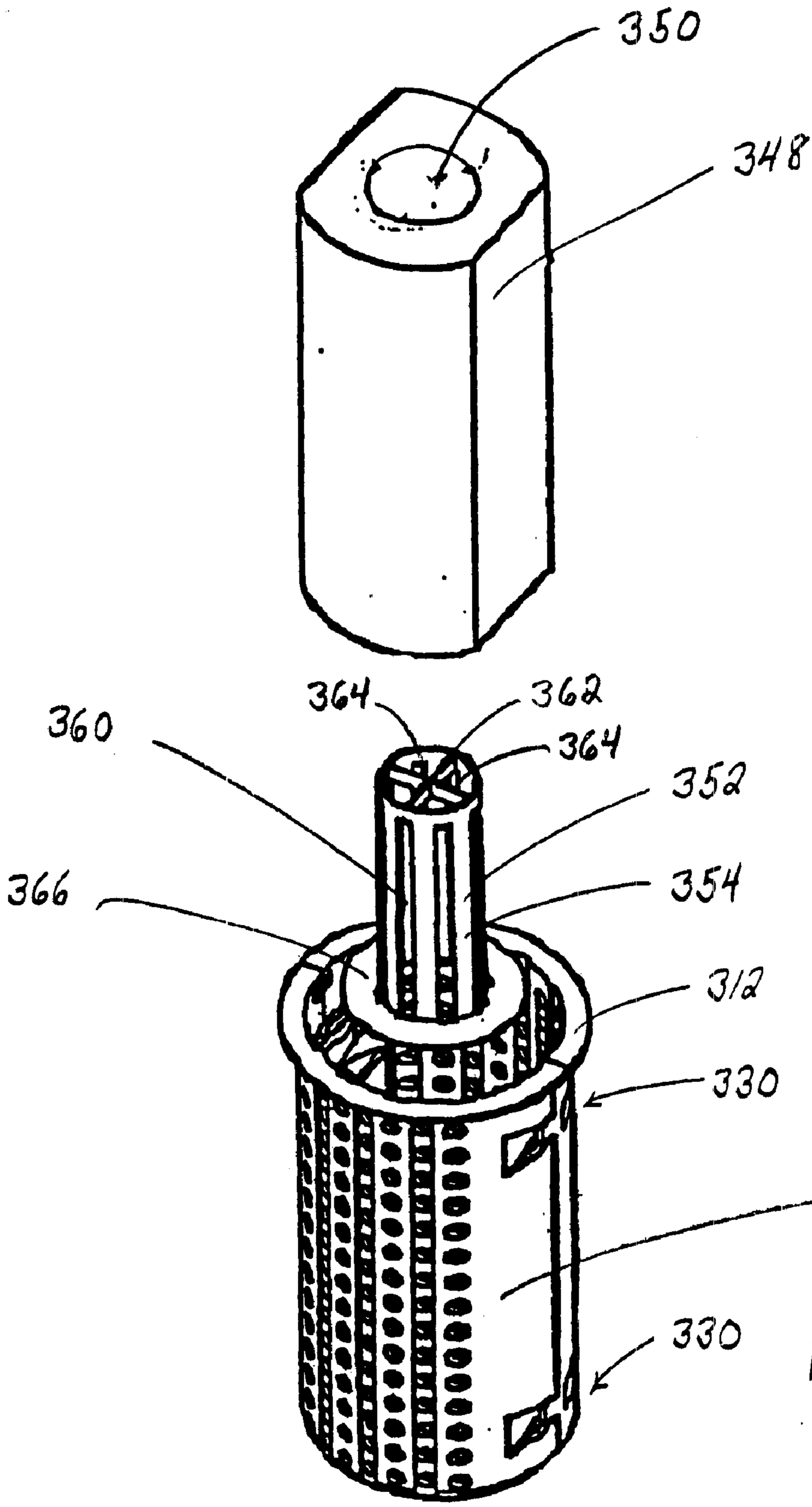


FIG 22

FIG. 27

370
372
372
380
384
376
374
378
396
392
394
382
386
388
388
386
376

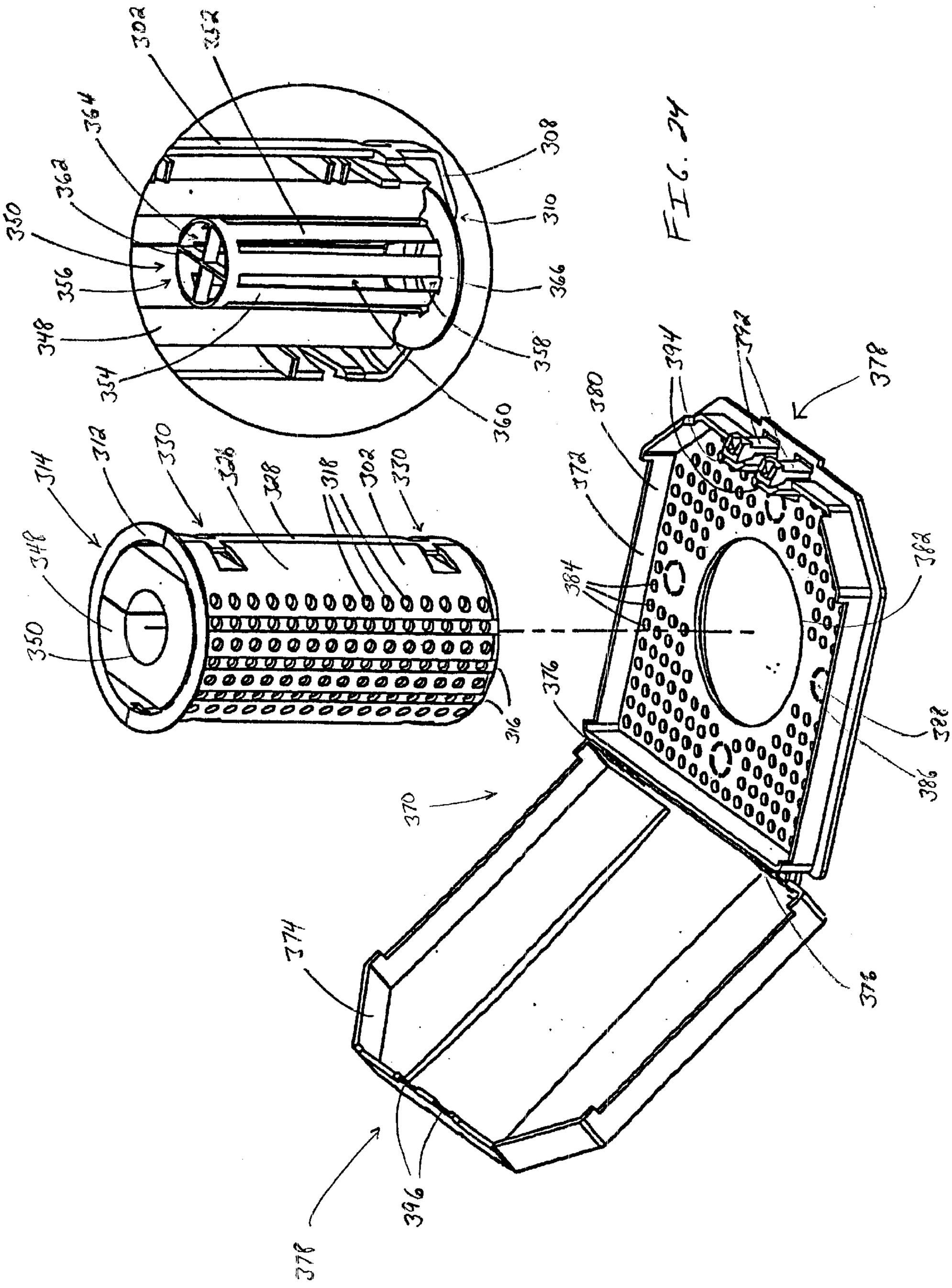

302
352
364
308
362
310
350
356
366
348
358
354
360
312
330
314
326
328
318
302
330
348
350
316
380
394
392
378
372
384
382
376
386
370
374
396
378

FIG. 24

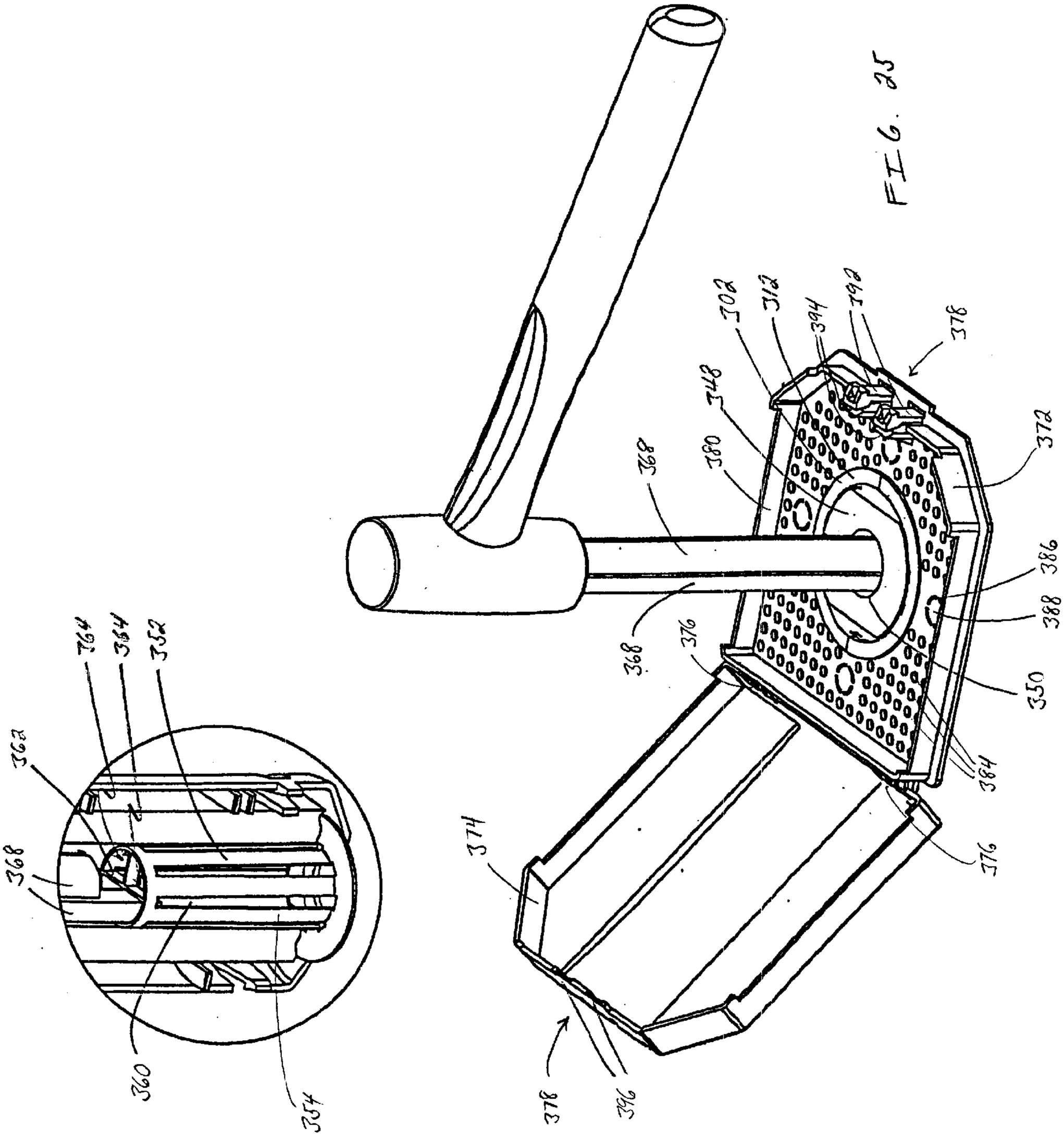


FIG. 25
362
364
352
368
360
354
382
380
348
308
312
364
366
378
372
386
388
376
350
384
374
378
376

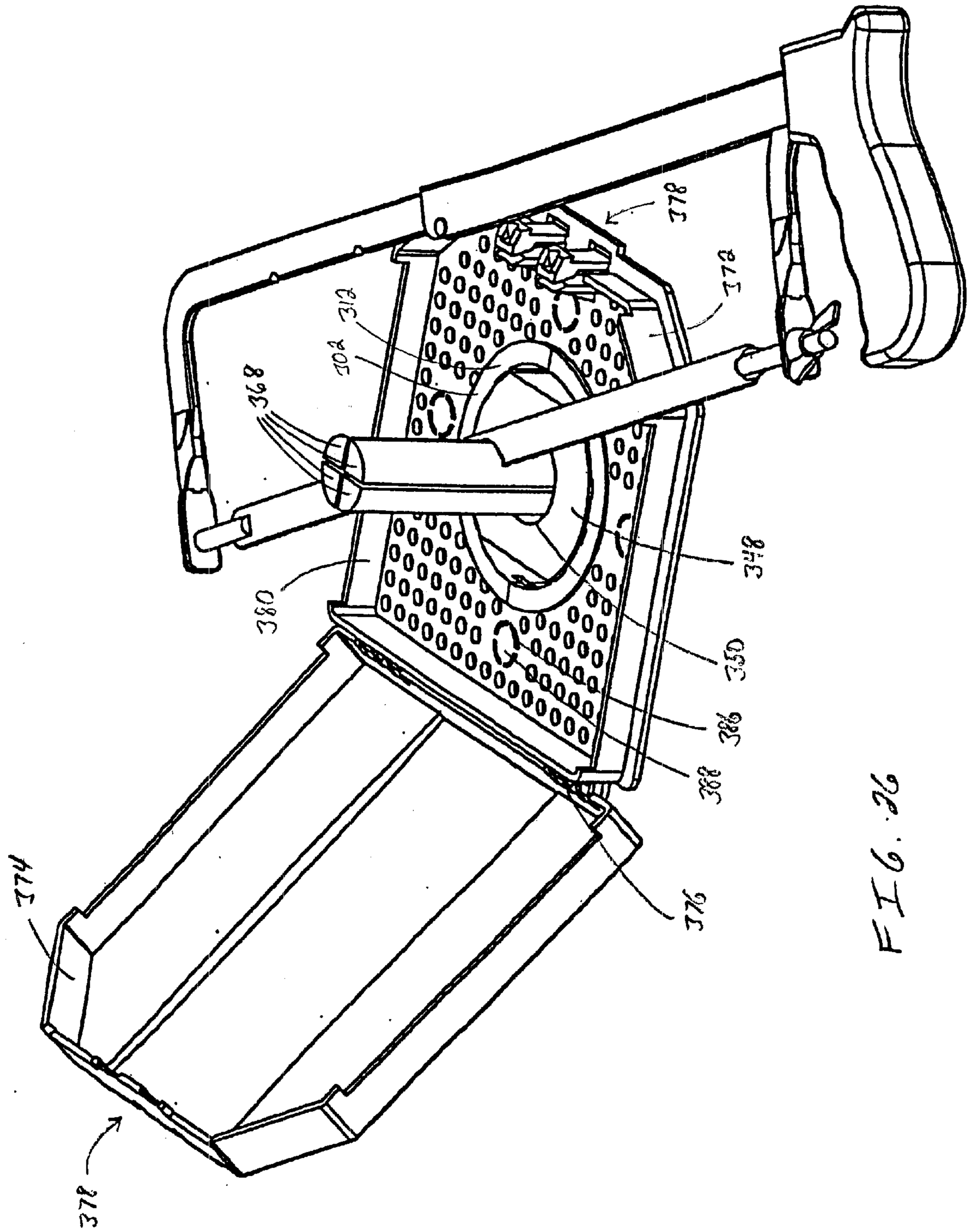


FIG. 36

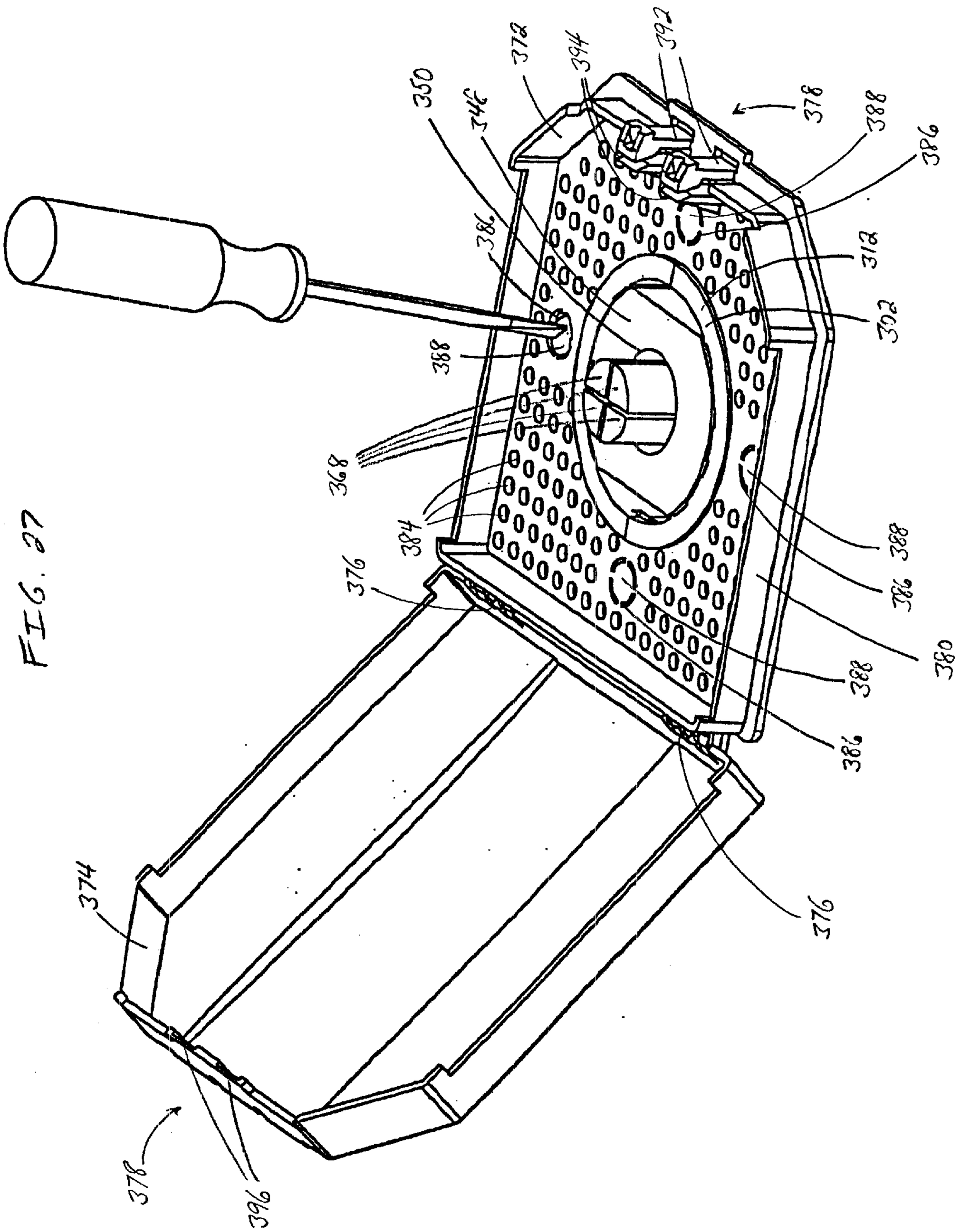


FIG. 27

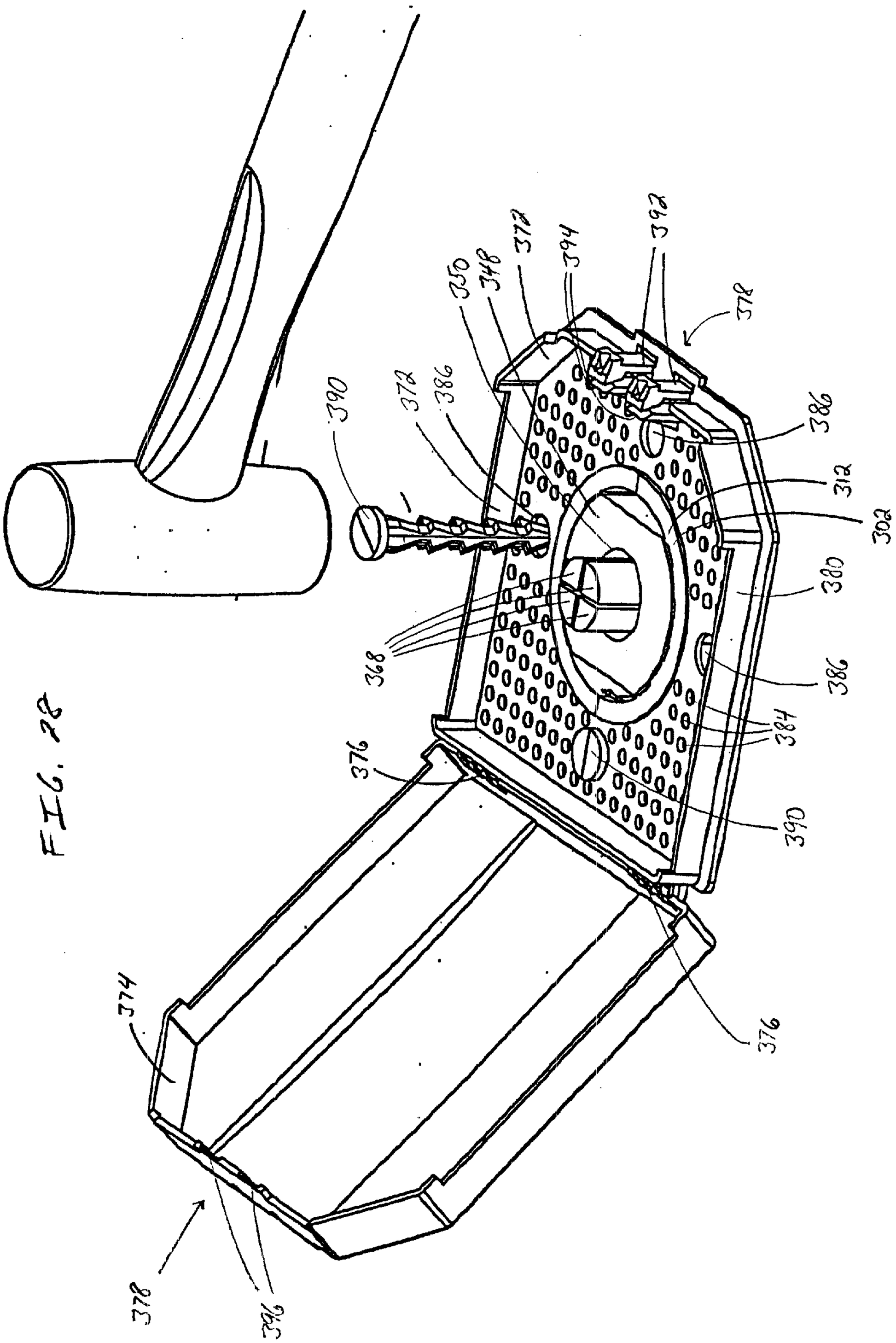

390
374
386
350
348
372
394
382
378
386
312
302
380
368
386
384
376
390
376
374
378
376

FIG. 28

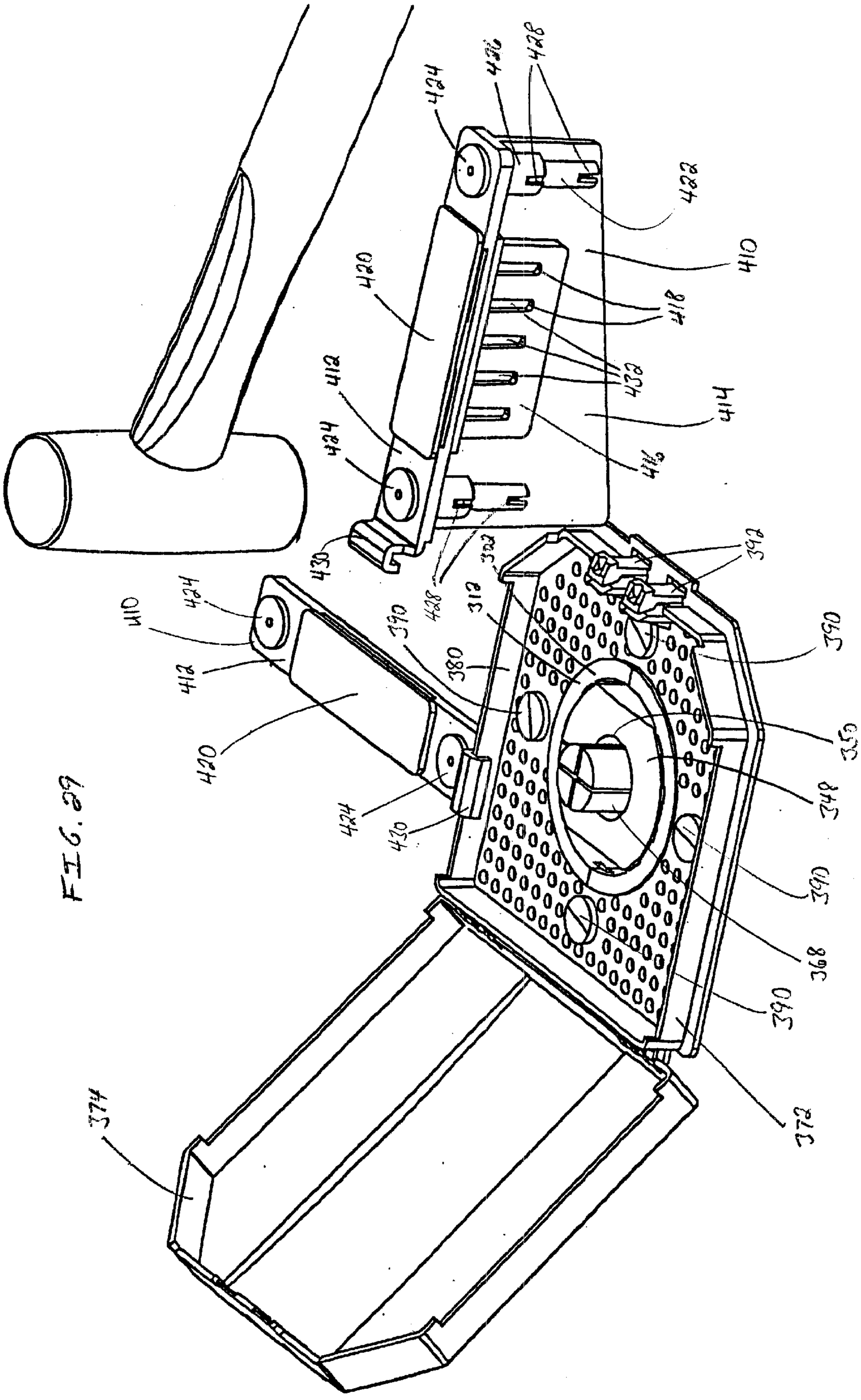

424
426
428
422
410
420
418
412
432
414
424
416
430
392
428
312
390
110
424
380
412
420
424
430
390
348
390
368
390
372
374

FIG. 23

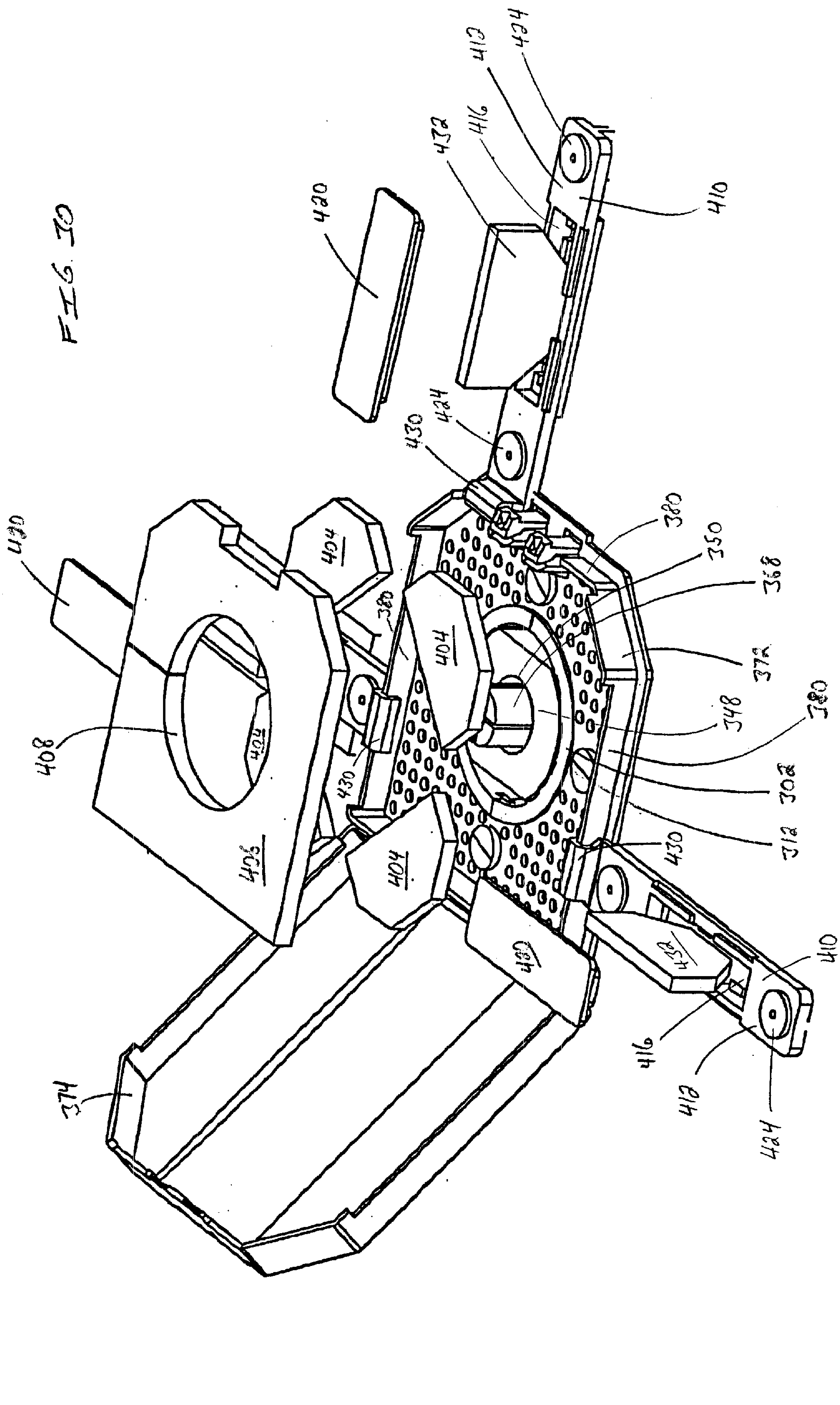

424
412
416
432
420
410
424
430
420
404
380
350
368
372
380
348
302
312
430
408
404
406
430
404
420
432
410
416
412
424
374

FIG. 10

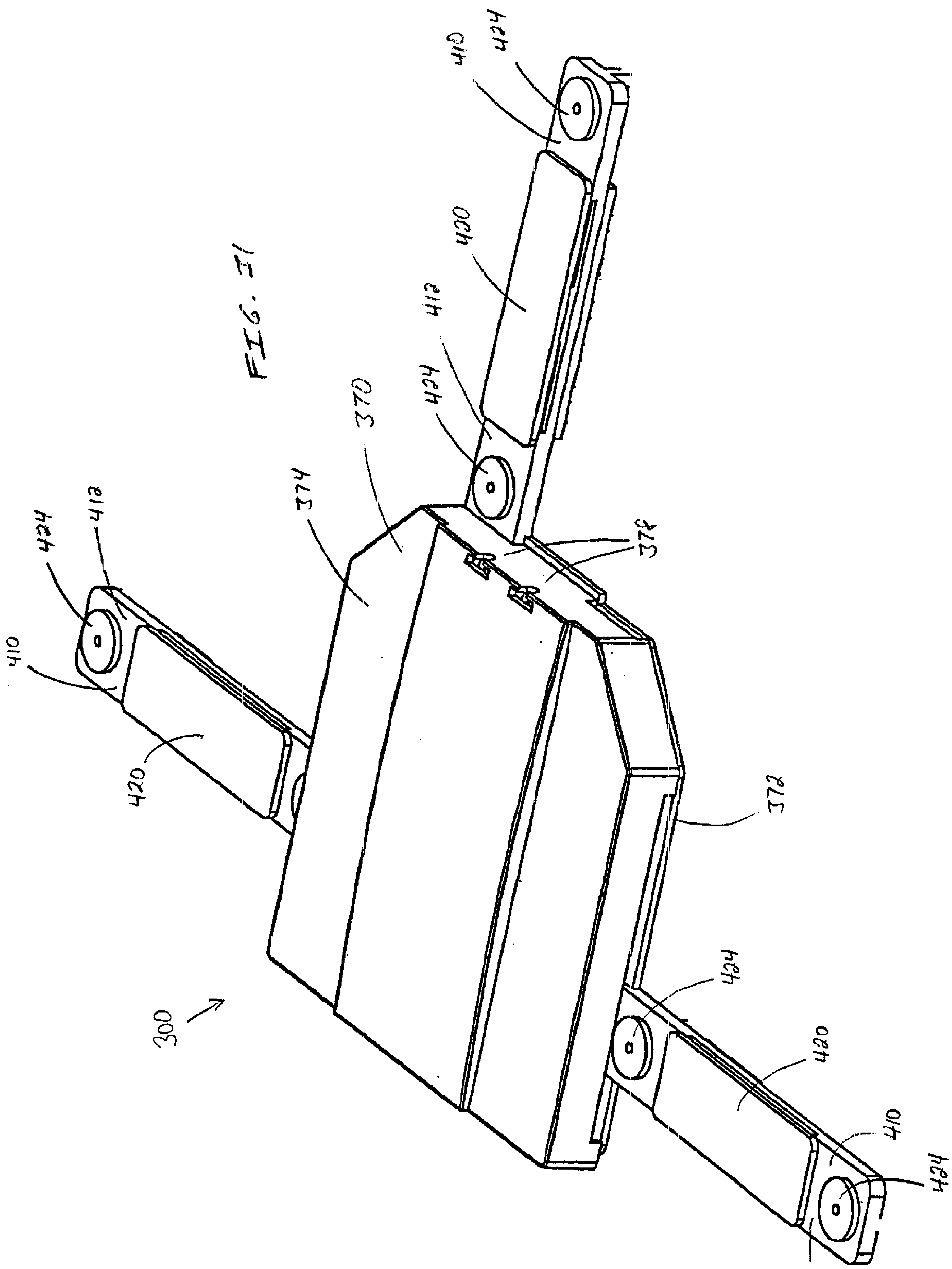

424
410
420
413
424
370
374
378
372
410
420
424
413
424
420
410
424
413
300

FIG. 31

APPARATUS FOR MONITORING AND/OR CONTROLLING TERMITES

RELATED APPLICATIONS

This application is a continuation-in-part of U.S. patent application Ser. No. 09/644,448, filed on Aug. 23, 2000 (abandoned), and U.S. patent application Ser. No. 09/644,449, filed on Aug. 23, 2000 (abandoned), the disclosures of which are incorporated herein by reference in their entirety.

TECHNICAL FIELD

The present invention is generally directed to the monitoring and/or controlling of termite activity in a selected area and, more particularly, to improved apparatus adapted to enable and enhance such monitoring and/or controlling.

BACKGROUND ART

Many well-known techniques have been developed for inducing termites to establish routes or networks from their foraging channels or tunnels to a monitoring station in order to confirm the occurrence of termite activity in a selected area, and thereafter to arrest further destruction by such insects by causing them to ingest certain types of pesticides, thereby controlling such termite activity. Examples of termite baiting devices are disclosed in U.S. Pat. Nos. 5,555,672 to Thorne et al. and 5,695,776 to Ballard et al. Thorne et al. disclose the use of a non-toxic bait material provided in the form of a chemical composition consisting of an agar mixture, decayed birch, uric acid and water, as well as the use of a delayed-action pesticide such as hydramethylnon. Ballard et al. disclose the use of wood treated with a slow-acting toxicant such as sulfluramid. Unlike the present invention disclosed hereinbelow, none of the presently-known techniques, of which the above-described references are representative, are believed to have adequately addressed structural solutions for attracting, monitoring and/or controlling termite activity while avoiding having to primarily depend on baiting compositions. In particular, while there appears to have been some acknowledgment of the fact that termites are attracted to certain types of surfaces, this line of inquiry has not been sufficiently explored in the development of termite monitoring and/or control. It is thus believed that there remains room for improvement in this area.

DISCLOSURE OF THE INVENTION

The present invention broadly results from the realization that structural paths such as grooves or channels, integrated with a housing for a termite monitoring and/or controlling station or similar device, can be utilized to attract termites to such monitoring and/or controlling station or device.

According to one embodiment of the present invention, a housing is provided for a station or device adapted for monitoring and/or controlling termites or other insects, and which is adapted to be situated in or on soil or sand. The housing contains a substance attractive for termite exploration and/or termite feeding, and comprises at least one wall and at least one surface, which surface defines at least one path attractive to termites. The housing can be adapted to receive a second insect monitoring and/or controlling device.

According to another embodiment of the present invention, a termite monitoring and/or controlling apparatus comprises a wall having an axial length, which wall is adapted for substantially subterranean installation at a ground location. An attractive material suitable for promoting termite activity is disposed proximate to the wall. A structure is disposed at the wall having an elongate volume and defining a path attractive to termites.

The present invention also provides a method for monitoring and/or controlling termites. A locus to be monitored and/or controlled is determined, and a ground covering device is placed on the locus or on a portion thereof, thereby substantially lowering the temperature of the locus or the portion of the locus. A termiticidal composition can be introduced in or on the locus.

According to an additional aspect of the present invention, a termite monitoring and/or controlling apparatus comprises a subterranean portion, an above-ground portion, and means for attaching the above-ground portion to the subterranean portion. The subterranean portion includes a wall having a longitudinal axis, a first attractive material suitable for promoting termite activity disposed proximate to the wall, and a structure disposed at the wall having an elongate volume and defining a path attractive to termites. The above-ground portion includes an enclosure and a second attractive substance disposed in the enclosure.

According to an additional embodiment of the present invention, a termite monitoring and/or controlling apparatus comprises a housing, a first termite attractive material, and a second termite attractive material. The housing is adapted for subterranean installation at a ground location, and includes a wall disposed along a longitudinal axis of the housing. The wall includes a termite attractive channel, and the channel has a plurality of termite attractive apertures. The first termite attractive material is disposed within the housing adjacent to the apertures, and has an axial bore generally parallel with the longitudinal axis. The second termite attractive material is disposed within the axial bore.

According to another embodiment of the present invention, a termite monitoring and/or controlling apparatus comprises a housing, a first termite attractive material, a lid, a second termite attractive material, a deflector member, and a third termite attractive material. The housing has a plurality of termite attractive channels, a partially closed end, and an open end opposing the partially closed end. The channels have a plurality of termite attractive apertures. The housing is adapted for subterranean installation at a ground location. The first termite attractive material has a centrally disposed bore, and is disposed within the housing adjacent to the apertures. The lid has a housing retaining hole and a plurality of termite attractive orifices. The lid is adapted for being positioned substantially flush with the ground location. The open end of the housing is supported by the housing retaining hole. The second termite attractive material is disposed within the lid adjacent to its termite attractive orifices. The deflector member has a platform, an elongate wedge downwardly extending perpendicular to the platform, a wedge slot provided within the elongate wedge, and a plurality of termite attractive grooves provided along the elongate wedge adjacent to the wedge slot. The platform is removably attached to the lid and is adapted for being positioned substantially flush with the ground location. The third termite attractive material is located within the wedge slot of the deflector member adjacent to the grooves.

According to yet another embodiment of the present invention, a termite monitoring and/or controlling apparatus comprises a housing, a first termite attractive material, a core, a second termite attractive material, a lid, a third termite attractive material, a deflector member, and a fourth termite attractive material. The housing has a plurality of

termite attractive channels, a partially closed end, and an open end opposing the partially closed end. The channels have a plurality of termite attractive apertures. The housing is adapted for subterranean installation at a ground location. The first termite attractive material has a centrally disposed bore, and is disposed within the housing adjacent to the apertures. The core has a jacket, a partially opened end, and an open end. The jacket has a plurality of termite attractive slits, and is positioned within the centrally disposed bore of the first attractive material. The open end of the core rests against the partially closed end of the housing within the housing. The second termite attractive material is located within the core and is adjacent to the slits. The lid has a housing retaining hole therein, and a plurality of termite attractive orifices. The open end of the housing is supported by the housing retaining hole. The lid is adapted for being positioned substantially flush with the ground location. The third termite attractive material is disposed within the lid adjacent to the orifices. The deflector member has a platform, an elongate wedge downwardly extending from the platform, a wedge slot provided within the elongate wedge, and a plurality of termite attractive grooves provided along the elongate wedge adjacent to the wedge slot. The platform is removably attached to the lid, and is adapted for being positioned substantially flush with the ground location. The fourth termite attractive material is located within the wedge slot of the deflector member adjacent to the grooves.

According to still another embodiment of the present invention, a termite monitoring and/or controlling apparatus comprises a housing, a first termite attractive material, a second termite attractive material, a tray, and a third termite attractive material. The housing is adapted for subterranean installation at a ground location. The housing includes a wall disposed along a longitudinal axis of the housing. The wall includes a termite attractive channel. The channel includes a plurality of termite attractive apertures. The first termite attractive material is disposed within the housing adjacent to the apertures, and includes an axial bore generally parallel with the longitudinal axis. The second termite attractive material is disposed within the axial bore. The tray extends transversely with respect to the housing. The third termite attractive material is disposed adjacent to a surface of the tray.

According to a further embodiment of the present invention, a termite monitoring and/or controlling apparatus comprises a housing, a first termite attractive material, a second termite attractive material, an enclosure, and a third termite attractive material. The housing is adapted for subterranean installation at a ground location. The housing includes a wall disposed along a longitudinal axis of the housing. The wall includes a termite attractive channel. The channel includes a plurality of termite attractive apertures. The first termite attractive material is disposed within the housing adjacent to the apertures, and includes an axial bore generally parallel with the longitudinal axis. The second termite attractive material is disposed within the axial bore. The enclosure extends generally transversely with respect to the housing. The enclosure includes a tray, a tray cover, and a locking mechanism removably securing the tray cover to the tray. The third termite attractive material is disposed within the enclosure.

In one specific embodiment, the locking mechanism includes a cover locking tab formed in the tray, a tapered resilient vertical tab formed in the tray and disposed adjacent to the cover locking tab, and a locking tab receptacle formed in the tray cover and adapted for engagement with the cover locking tab.

According to an additional aspect of the present invention, a key device is provided, and is adapted for insertion into the locking tab receptacle and for engagement with the cover locking tab so as to assist in unlocking and thereby disengaging the tray cover of the enclosure from the tray.

According to any of the above-recited embodiments in which the second termite attractive material is disposed within the axial bore of the first termite attractive material, a further embodiment is provided in which the second termite attractive material is partitioned into a plurality of second termite attractive material subcomponents. Each subcomponent extends generally in parallel with the longitudinal axis of the housing and is spaced from the other subcomponents so as to create additional termite attractive surfaces.

In addition, an embodiment is provided in which a core is disposed within the axial bore of the first termite attractive material. The core includes a partitioning structure defining a plurality of axially oriented core subsections. Each second termite attractive material subcomponent is retained by the partitioning structure in a corresponding one of the core subsections.

It is therefore an object of the present invention to provide a housing adapted for use in conjunction with a substance attractive to termite exploration, which housing can be employed to monitor termite activity and/or control termite destruction of nearby structures prone to termite infestation.

It is another object of the present invention to provide a housing that includes structures such as channels or grooves attractive to termite exploration.

It is yet another object of the present invention to provide a housing adapted to attract termite exploration and which can be installed in a subterranean environment.

It is still another object of the present invention to provide a termite monitoring and/or controlling device for use in a subterranean environment, which is adapted to receive and cooperate with a second termite monitoring and/or controlling device adapted for use in an above-ground environment.

It is a further object of the present invention to provide a termite monitoring and/or controlling device adapted to receive and cooperate with a termite deflecting structure.

Some of the objects of the invention having been stated hereinabove, other objects will become evident as the description proceeds when taken in connection with the accompanying drawings as best described hereinbelow.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a termite monitoring and/or controlling station in assembled form according to one embodiment of the present invention;

FIG. **2** is a perspective view of a housing adapted for use in conjunction with the termite monitoring and/or controlling station illustrated in FIG. **1**;

FIG. **2**A is a perspective view of a half-section of the housing illustrated in FIG. **2**;

FIG. **3** is a perspective view of a substance attractive to termites and adapted for insertion in and use in conjunction with the housing illustrated in FIG. **2**;

FIG. **4**A is a perspective view of the top side of a cover adapted for use with the housing illustrated in FIG. **2**;

FIG. **4**B is a perspective view of the bottom side of the cover illustrated in FIG. **4**A;

FIG. **5** is a perspective view of a combined subterranean and above-ground termite monitoring and/or controlling

station in assembled form according to another embodiment of the present invention;

FIG. **6** is a perspective exploded view of the embodiment illustrated in FIG. **5**;

FIG. **7** is a perspective cut-away view of the embodiment illustrated in FIG. **5**;

FIG. **8**A is a perspective view of the top side of a second termite monitoring and/or controlling device for use in the second embodiment of the termite monitoring and/or controlling station shown in FIG. **5** according to the present invention;

FIG. **8**B is a perspective view of the bottom side of the second device illustrated in FIG. **8**A;

FIG. **9** is a perspective view of a second attractive substance adapted for installation in the second device illustrated in FIG. **8**A;

FIG. **10** is a diagram illustrating the housing of FIG. **2** connected to an elongate component according to the present invention;

FIGS. **11**A–**11**D are cross-sectional views illustrating various possible cross-sectional profiles for the elongate component of FIG. **10**;

FIG. **12** is an exploded view of a termite monitoring and/or controlling station according to a third embodiment of the present invention;

FIG. **13**A is a perspective view of a two-piece housing adapted for use in conjunction with the third embodiment of the station illustrated in FIG. **12**;

FIG. **13**B is a perspective view of a unitary housing adapted for use in conjunction with the third embodiment of the station illustrated in FIG. **12**;

FIG. **14**A is a perspective view of a one-half section of the housing illustrated in FIG. **13**A;

FIG. **14**B is a perspective view of a one-half section of the housing illustrated in FIG. **13**A, wherein an alternative bottom section of the housing is illustrated;

FIG. **15** is a perspective view of the housing illustrated in FIG. **13**A and including the first material therein;

FIG. **16** is a partial cross-sectional view of the housing illustrated in FIG. **15**;

FIG. **17** is a partial cross-sectional view of the housing illustrated in FIG. **15**, wherein wooden dowels are provided;

FIGS. **18**A through **18**C are perspective views of a lid for use in conjunction with the termite monitoring and/or controlling station illustrated in FIG. **12**;

FIG. **19**A is an exploded view of the lid illustrated in FIGS. **18**A through **18**C;

FIG. **19**B is an exploded view of an alternative embodiment of the lid illustrated in FIGS. **18**A through **8**C;

FIG. **20** is a perspective view of the lid illustrated in FIGS. **18**A through **18**C supporting the housing;

FIG. **21** is a perspective view of a deflector device for attachment to the lid;

FIG. **22** is an exploded view of the housing, a core, and a first material provided in accordance with the present invention;

FIG. **23** is a perspective view of the lid positioned substantially flush with a ground location;

FIG. **24** is a perspective view of the housing prior to being inserted into the ground location in combination with the lid;

FIG. **25** is a perspective view of a second material such as one or more wooden dowels being inserted into the core;

FIG. **26** is a perspective view illustrating the removal of excess length of the second material;

FIG. **27** is a perspective view of the removal of spike tabs from a tray of the lid;

FIG. **28** is a perspective view illustrating the installation of anchoring spikes into the spike orifices of the tray of the lid;

FIG. **29** is a perspective view illustrating the attachment of the deflector members to the lid;

FIG. **30** is a partially exploded view of the termite monitoring and/or controlling station in accordance with the present invention; and

FIG. **31** is a perspective view of a fully assembled termite monitoring and/or controlling station in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

First Embodiment of the Invention

Referring now to FIGS. **1**–**4**B, a termite or other insect monitoring and/or controlling station or device, generally designated **10**, is illustrated according to one embodiment of the present invention. Station **10** includes a housing generally designated **20**. Housing **20** can be cylindrical as shown in FIGS. **1**, **2** and **2**A, or can have some other shape or profile such as square, triangular, conic, pyramidal, or the like. As shown in FIG. **2**, housing **10** generally includes at least one wall **25** defining an exterior surface **25**A and/or an interior surface **25**B. In the embodiment shown in FIGS. **2** and **2**A, cylindrical housing **20** is formed by securing two semi-cylindrical halves together. For example, as best shown in FIG. **2**A, each half of housing **20** can be provided with one or more complementary securing or interlocking arrangements generally designated **30** and **40**, respectively, cooperating with various openings **20**A on housing **20**. Each securing arrangement **30** in the illustrated example includes a tapered, resilient side tab **32**, a vertically oriented slot **34**, and a horizontally oriented slot **36**, all of which are formed on or attached to housing wall **25**. Each complementary securing arrangement **40** includes a tapered, resilient side tab **42** and a planar tab **44**, also formed on or attached to housing wall **25**. Each side tab **42** is adapted for insertion through one of vertically oriented slots **34** and for locking engagement with one of openings **20**A of housing **20**, each side tab **32** is adapted for locking engagement with one of openings **20**A of housing **20**, and each planar tab **44** is adapted for insertion into one of horizontally oriented slots **36** extending from wall **25**. Housing **20** can be constructed from a plastic material or from a substance that is attractive, penetrable and/or digestible by termites. Housing **20** can also be transparent if desired.

An important aspect of the present invention resides in the fact that housing **20** is structured to define at least one path on exterior surface **25**A and/or interior surface **25**B of housing wall **25**, but preferably at least on exterior surface **25**A, which path is attractive to foraging termites. In the exemplary embodiment of housing **20** shown in FIGS. **2** and **2**A, the path takes the form of a channel **50** or **60** running along the axial length of wall **25** of housing **20**. As shown, several such channels **50** and **60** can be provided, either along exterior surface **25**A and/or interior surface **25**B but, preferably, at least along exterior surface **25**A. Hence, in FIGS. **2** and **2**A, both exterior and interior channels **50** and **60** respectively are illustrated. Channel or channels **50** or **60** can present any number of cross-sectional profiles, such as substantially square, rectilinear, circular, semi-circular, triangular, oval, semi-oval, L-shaped, T-shaped, or

X-shaped. It is further preferable that at least one of the dimensions of the cross-section of channel **50** or **60** (e.g., depth, width, diameter, or the like) be in the range of approximately 3 to approximately 5 mm. In addition, channels **50** or **60** can be oriented substantially parallel to a longitudinal axis L of housing **20** and lead toward an open end **20**B of housing **20**. Alternatively, channels **50** or **60** can be oriented substantially along a spiral or helical direction with respect to longitudinal axis L, or substantially orthogonal thereto.

Importantly, each channel **50** or **60** must provide an elongate volume in and through which termites would be wont to travel and construct mud tubes as part of their excursions to and from their nesting areas. Channels **50** or **60** can be formed integrally with the construction of housing wall **25**, such as by forming recesses **52** or **62** directed into the material of wall **25** or adjacent projections **54** or **64** protruding out from wall **25**, or can be provided as separate pieces attached or secured to housing wall **25**. In the embodiment shown in FIGS. **2** and **2**A, channels **50** or **60** generally take the form of troughs or grooves **52** or **62** which are defined by adjacent ridges or projections **54** or **64**. Accordingly, when a plurality of channels **50** or **60** are provided, each section of housing wall **25** that includes a group of adjacent channels **50** or **60** could be considered from a cross-sectional perspective as having a corrugated profile defined by alternating ridges **54** or **64** and troughs **52** or **62**.

As further illustrated in FIGS. **2** and **2**A, housing **20** can be provided with one or more wing-like projections or surfaces **70**, either integral with or attached to housing wall **25**, to serve as additional surfaces to guide or entice termites to housing **20**.

Preferably, housing **20** is provided with a means of termite ingress to housing and/or egress from housing **20**, within a path of housing **20** and at intermediate points along the axial length of housing **20**. Thus, in FIGS. **2** and **2**A, each interior channel **60** provided on housing **20** has a series of linearly spaced apertures **66** and each exterior channel **50** has a series of linearly spaced apertures **56**. In this preferred configuration, an aperture **56** or **66** is always available for a termite whether traveling from inside or outside of housing wall **25**. Apertures **56** or **66** can present any number of cross-sectional profiles, such as substantially square, rectilinear, circular, semi-circular, triangular, oval, semi-oval, L-shaped, T-shaped, or X-shaped. The area of the cross-section of each aperture **56** or **66** is preferably in the range of approximately 3 to approximately 5 mm.

Referring to FIG. **3**, housing **20** is adapted to contain, or at least be adjacent to or in close proximity to, an attractive substance **75** suitable for promoting or inviting termite exploration and/or termite feeding, such as a floral foam type of material. Attractive substance **75** could be a digestible (i.e., a food source) material. The attractive attribute or property accorded to or presented by attractive substance **75** could be physical, chemical or comestible in nature. Attractive substance **75** can further include or contain a termiticide. Preferably, attractive substance **75** is wetted to produce a cool, damp or humid environment intended to further promote or invite termite exploration, burrowing and/or feeding. In use, attractive substance **75** can be rewetted periodically as needed. Attractive substance **75** can further have a bore **77** formed through its axial length in order to provide access to a probing or observational instrument to assist in detecting the occurrence of termite activity within housing **20**. Referring back to FIGS. **2** and **2**A, housing wall **25** can include one or more spacers **25**C projecting from interior surface **25**A for the purpose of maintaining the position of attractive substance **75** substantially concentric with housing wall **25**, or of providing an amount of radial spacing between attractive substance **75** and housing wall **25**, or of serving as retaining clips to maintain an axial position of attractive substance **75** with respect to housing **20**.

In use, housing **20** with attractive substance **75** therein is preferably installed in a hole bored into the ground, such as soil or sand, so that housing **20** and attractive substance **75** operate in a substantially subterranean environment. Evidence of termite activity can be found by periodically inspecting attractive substance **75** through open end **20**B of housing **20** defined by the top edge of housing wall **25** and/or by removing attractive substance **75** from housing **20** through open end **20**B, which can be accomplished without disturbing housing **20** in its installed state.

Referring to FIGS. **4**A and **4**B in conjunction with FIGS. **1**, **2**A, and **2**B, a cover generally designated **80** can be provided for use in combination with housing **20**. Cover **80** is useful for shielding housing **20** and attractive substance **75** from the heating and desiccating effects wrought by above-ground atmospheric conditions, in order to maintain a damp and cool environment within housing **20** and attractive substance **75** as well as in the vicinity around housing **20** below cover **80**. Cover **80** is also useful in identifying the location of housing **20** after housing **20** has been installed in a ground location, FIG. **1** illustrates cover **80** installed onto housing **20**. In use, cover **80**, or at least its lower lip **82**, would be substantially flush with the ground surface at the area where housing **20** is to operate.

Cover **80** can be accommodated by providing housing **20** with one or more support plates **85**, which are either integral with or attached to housing **20**, as best shown in FIG. **2**. Cover **80** can be installed in an interlocking relation with housing **20** by providing housing **20** with securing means generally designated **90** adapted for engagement with complementary cover securing means generally designated **110**. In the exemplary embodiment, housing securing means **90** includes mounting posts **92** and tapered, resilient housing locking tabs **94**. Both mounting posts **92** and housing locking tabs **94** extend upwardly from support plates **85**. Cover securing means **110** includes receptacles **112** and tapered cover locking tabs **114** depending downwardly from the underside of cover **80**. On the top of cover **80**, each receptacle **112** has an aperture **112**A and a slot **112**B. In use, cover **80** is fitted onto housing **20** by aligning receptacles **112** with corresponding mounting posts **92** and pushing cover **80** downwardly such that mounting posts **92** are received in receptacles **112** and a shoulder surface of each housing locking tab **94** engages with a shoulder surface of corresponding cover locking tab **114**. With this configuration, cover **80** can be removed from housing **20** by inserting a screwdriver or other suitable implement into slot **112**B to force the respective shoulder surfaces to disengage from each other, and by grasping cover **80** while pushing on mounting posts **92** through apertures **112**A.

Second Embodiment of the Invention

Referring to FIGS. **5–9**, a second embodiment of the monitoring and/or control station or device, generally designated **115**, is illustrated in accordance with the present invention, wherein a second insect monitoring and/or controlling device generally designated **120** (see FIG. **6**) is cooperatively provided in combination with station **10**. As shown in FIGS. **8**A, **8**B and **9**, a plate or tray generally

designated **122** has an upwardly extending lip **124**, a central aperture **126** and one or more laterally disposed apertures **128**. Tray **122** is adapted to contain an attractive substance **130** which, similar to attractive substance **75** contained within housing **20**, is suitable for promoting or inviting termite exploration and/or termite feeding. Accordingly, attractive substance **130** of second monitoring and/or controlling device **120** can likewise be constructed from a floral foam type of material, and can further include or contain a termiticide. In use, attractive substance **130** is preferably wetted to produce a cool, damp or humid environment intended to further promote or invite termite exploration, burrowing and/or feeding. Attractive substance **130** has a central aperture **132** and one or more laterally disposed apertures **134**.

Referring to the respective assembled and exploded views of monitoring and/or control station or device **115** shown in FIGS. **5** and **6**, above-described housing **20** associated with monitoring and/or controlling station **10** can be adapted to receive second monitoring and/or controlling device **120**. For this purpose, and as illustrated in conjunction with the exemplary embodiment now being described, attractive substance **130** is intended to be removably disposed in the internal volume defined by tray **122**, and tray **122** is mounted on support plates **85** of housing **20** and hence held in place between housing **20** and cover **80**. When fully assembled as shown in FIG. **5**, a bottom section of tray **122** is substantially level with lower lip **82** of cover **80** and thus substantially flush with the ground surface. Second device **120** can thus operate as an above-ground monitoring and/or controlling means while station **10** with housing **20** operates as a below-ground or subterranean monitoring and/or controlling means. Respective central apertures **126**, **132**, of tray **122** and attractive substance **130** of second monitoring and/or control device **120** facilitate access and inspection of housing **20** and/or attractive substance **75** associated with housing **20**. Laterally disposed apertures **128** on tray **122** provide means for ingress to and egress from attractive substance **130** by termites. The various surfaces shown in FIG. **5**, including channels **50** or **60**, housing wall **25**, support plates **85**, and bottom section of tray **122**, generally provide access means by which termites are encouraged to travel between housing **20** and second monitoring and/or controlling device **120**. In addition, as best shown in FIG. **9**, laterally disposed apertures **134** of attractive substance **130** entice or promote termites to enter such apertures **134** and consequently explore or forage within the material constituting attractive substance **130**.

It can be seen that second device **120** of control station or device **115**, comprising tray **122** and attractive substance **130**, as well as cover **80**, have the effect of "shadowing" housing **20** and areas immediately proximate thereto by creating a barrier to sunlight and acting as a condensation trap. As a result, both attractive substances **75** and **130** are kept damp, and the soil or sand situated beneath second device **120** is kept humid and cool, according to psychrometric principles, thereby maintaining an optimal environment for attracting termites to housing **20**.

Referring to the cross-sectional view of FIG. **7**, a central plate **140** (of which only a half portion is shown) can be disposed within the uppermost interior of housing **20** to stabilize attractive substance **75** and keep it in place. Central plate **140** has holes such as circular apertures **142** and arcuate aperture **144** to provide access for observation of attractive substance **75** and/or for sensing or probing instruments.

Referring back to FIG. **2**, housing **20** could be provided with means for interfacing with additional means for attracting termites to housing **20**. Such means could include wedge or plate-shaped surfaces, similar to surfaces **70** but provided independently of devices **10** and/or **120**. Such additional means could be used to intercept the course of a termite in order to redirect the termite towards housing **20**. In one particular embodiment illustrated in FIG. **2** in combination with FIGS. **10** and **11**A–**11**D, housing **20** has one or more insertion apertures **162** bored through housing wall **25** and further includes water insertion recesses **165** formed in or on housing **20** or attached thereto. In FIG. **2**, by way of example, housing **20** includes four water insertion recesses **165**, two of which are shown positioned above corresponding insertion apertures **162** with the understanding that additional insertion apertures **162** would also be disposed below the other two respective water insertion recesses **165**.

As shown in FIG. **10**, each insertion aperture **162** is adapted to receive an elongate component **170** such that elongate component **170** is directed at a downward and outward angle with respect to housing **20** (e.g., **45**E). Alternatively, each elongate component **170** could extend straight and radially outwardly from housing **20**. In either configuration, elongate components **170** are connected to housing **20** and serve to expand the effective range of influence of station **10** in attracting termites to housing **20**, by intercepting the natural paths of termites foraging in the vicinity of housing **20** and redirecting or at least encouraging such termites to travel toward housing **20**. Elongate components **170** are also useful for spacing housing **20** at a distance from the foundation of a building or other structure in order to direct termites sway from such structure since, given space limitations and clearance required when using augers and other boring devices, it is difficult and impracticable to install station **10** or other monitoring and/or controlling devices immediately adjacent to such structures.

As shown in FIGS. **11**A and **11**B, respectively, elongate component **170** could be constructed in the form of a cylindrical rod **170**A or a rectilinear beam **170**B, or alternatively have some other suitable cross-sectional profile. Elongate components **170** could further cooperate with corresponding water insertion recesses **165** as a means for maintaining the dampness or moisture content of the area surrounding housing **20**. That is, water insertion recesses **165** assist in locating points at which water can be injected or introduced, such as through the use of a syringe-type instrument, onto elongate components **170**. As shown in FIGS. **11**C and **11**D, respectively, the water distribution function of elongate components **170** can be enhanced constructing elongate components **170** with a channel or trough-like profile, such as elongate component **170**C or elongate component **170**D.

Third Embodiment of the Invention

Referring now to FIGS. **12**, **13**A, **13**B, **14**A and **14**B, an additional embodiment of the present invention is illustrated. An insect monitoring and/or controlling station, generally designated **300**, includes a housing **302**. As shown in FIGS. **13**A, **13**B, **14**A and **14**B, the housing **302** includes an interior surface **304**, an exterior surface **306**, an inner retaining ridge **308** defining a partially closed end **310**, and an outer rim **312** defining an open end **314**, which opposes the partially closed end **310**. The interior surface **304** and the exterior surface **306** have a plurality of termite attractive channels **316** provided in the housing **302** along the interior surface **304** and the exterior surface **306**, respectively. The channels **316** have a plurality of termite attractive apertures **318** provided therein. The interior surface **304** of the housing **302** also has a number of spacers **320** provided thereon. In

addition, the housing **302** also includes an elongate interior void **322** having a central longitudinal axis **324**.

As shown in FIGS. **13**A, **14**A and **14**B, the housing **302** according to one embodiment is formed by securing a one-half section **326** of the housing **302** together with a second-half section **328** of the housing **302** via a number of complementary securing arrangements **330**. The securing arrangement **330** of the one-half section **326**, which includes a horizontally oriented slot **332**, a locking tab **334**, and a vertically oriented slot **336**, is secured to the securing arrangement **330** of the second-half section **328**, which includes a horizontally planar tab **338**, a tapered resilient key tab **340**, and a vertically oriented opening **342**, respectively. That is, the horizontally planar tab **338** of the second-half section **328** is adapted for securing engagement with the horizontally oriented slot **332** of the one-half section **326**. In addition, the tapered resilient key tab **340** of the second-half section **328** is adapted for insertion through the vertically oriented slot **336** of the one-half section **326** and for securing engagement with the locking tab **334** of the one-half section **326**. Furthermore, the locking tab **334** of the one-half section **326** is adapted for securing engagement with the vertically oriented opening **342** of the second-half section **328**.

Simultaneously, a securing arrangement **330** of a second-half section **328**, which includes a horizontally oriented slot **332**, a locking tab **334**, and a vertically oriented slot **336**, is secured to the securing arrangement **330** of the one-half section **326**, which includes a horizontally planar tab **338**, a tapered resilient key tab **340**, and a vertically oriented opening **342**, respectively. That is, the horizontally planar tab **338** of the one-half section **326** is adapted for securing engagement with the horizontally oriented slot **332** of the second-half section **328**. In addition, the tapered resilient key tab **340** of the one-half section **326** is adapted for insertion through the vertically oriented slot **336** of the second-half section **328** and for securing engagement with the locking tab **334** of the second-half section **328**. Furthermore, the locking tab **334** of the second-half section **328** is adapted for securing engagement with the vertically oriented opening **342** of the one-half section **326**.

The housing **302** can be cylindrical in shape, as shown in FIGS. **12**, **13**A, **13**B, **14**A and **14**B. Alternatively, the housing **302** can have some other shape (not shown), such as conical, rectangular, triangular, pyramidal, or the like. The housing **302** can be constructed from a substance, such as wood, that is attractive, penetrable and/or digestible by termites. Alternatively, the housing **302** can be constructed from a thermoplastic injection molded polymeric material. If so desired, the particular thermoplastic injection molded polymeric material selected could be one in which the housing **302** would be transparent in appearance. In the specific embodiment illustrated in FIG. **13**B, housing **302** has a unitary rather than a multi-piece configuration.

In the specific embodiment illustrated in FIG. **14**B, inner retaining ridge **308** has increased surface areas, can be cone-shaped, and can include termite-attractive apertures **318**.

An important feature of the present embodiment resides in the fact that the housing **302** is structured to provide a plurality of termite attractive channels **316** along the interior surface **304** and the exterior surface **306** of the housing **302**. As shown in FIGS. **12**, **13**A, **13**B, **14**A and **14**B, the channels **316** traverse along the interior surface **304** and the exterior surface **306** of the housing **302** substantially parallel to the central longitudinal axis **324** of the housing **302**. Alternatively, the channels **316** can traverse along the interior surface **304** and the exterior surface **306** of the housing **302** in a substantially spiral or helical direction, with respect to the central longitudinal axis **324** of the housing **302**. Alternatively, the channels **316** can be oriented in a substantially orthogonal or perpendicular fashion with respect to the central longitudinal axis **324** of the housing **302**.

As shown in FIGS. **12**, **13**A, **13**B, **14**A and **14**B, the channels **316** of the housing **302** have a substantially rectangular cross-sectional profile. However, the channels **316** of the housing **302** can be provided in any number of other cross-sectional profiles, such as substantially square, substantially triangular, substantially circular, substantially semi-circular, substantially oval, substantially semi-oval, substantially L-shaped, substantially T-shaped, or substantially X-shaped. The cross-sectional profiles of the channels **316** have a dimension (i.e., depth, width, diameter, or the like) that preferably ranges from about 3 millimeters (mm) to about 5 mm.

It is also important that each channel **316** provide an elongate volume in and through which termites would be wont to travel and construct mud tubes as part of their excursions to and from their foraging and nesting areas. As shown in FIGS. **12**, **13**A, **13**B, **14**A and **14**B, channels **316** generally form a series of alternating troughs **344** and corresponding ridges **346** adjacent and parallel to the troughs **344**. The troughs **344** can be formed integrally within the housing **302** therefore creating corresponding ridges **346**, protruding out from housing **302**, that are adjacent and parallel to the troughs **344**. Alternatively, the ridges **346** can be provided as separate elongate pieces that are attached or secured to the housing **302** thus creating corresponding troughs **344** that are adjacent and parallel to the ridges **346**.

Another important feature of the housing resides in the fact that the channels **316** along the interior surface **304** and the exterior surface **306** of the housing **302** have a plurality of termite attractive apertures **318** provided therein. The apertures **318** provide an avenue for termite ingress into and/or egress from the housing **302**, at intermediate points along the exterior surface **306** and/or the interior surface **304**, respectively, of the housing **302**. Therefore, an aperture **318** is always available for a termite to travel through, regardless of whether the termite is traveling either from the outside to the inside, or from the inside to the outside, of the housing **302**. As described hereinabove, apertures **318** can also be provided in inner retaining ridge **308**, as shown in FIG. **14**B, in order to attract and provided access for termites foraging below housing **302**.

As shown in FIGS. **12**, **13**A, **13**B, **14**A and **14**B, the apertures **318**, within each channel **316**, traverse along the interior surface **304** and the exterior surface **306** of the housing **302** substantially parallel to the central longitudinal axis **324** of the housing **302**. Alternatively, the apertures **318**, within each channel **316**, can traverse along the interior surface **304** and the exterior surface **306** of the housing **302** in a substantially spiral or helical direction, with respect to the central longitudinal axis **324** of the housing **302**. Alternatively, the apertures **318**, within each channel **316**, can be oriented in a substantially orthogonal or perpendicular fashion with respect to the central longitudinal axis **324** of the housing **302**.

As shown in FIGS. **12**, **13**A, **13**B, **14**A and **14**B, the apertures **318**, within each channel **316** of the housing **302** and in inner retaining ridge **308**, have a substantially circular cross-sectional profile. However, the apertures **318**, within each channel **316** of the housing **302**, can be present in any

number of other cross-sectional profiles, such as substantially square, substantially rectangular, substantially triangular, substantially semi-circular, substantially oval, substantially semi-oval, substantially L-shaped, substantially T-shaped, or substantially X-shaped. The cross-sectional profiles of the apertures **318** have a dimension (i.e., depth, width, diameter, or the like) that preferably ranges from about 3 mm to about 5 mm.

Referring to FIG. **15**, a first termite attractive material (first material) **348**, having a centrally dispose bore **350**, is interposed within the elongate interior void **322** of the housing **302**, adjacent to the spacers **320** of the housing **302**, and in close proximity of the apertures **318** of the housing **302**. The spacers **320** along the interior surface **304** of the housing **302** provide an amount of radial spacing between the first material **348** and the housing **302**, while maintaining the position of the first material **348** substantially concentric with the central longitudinal axis **324** of the housing **302**. Apertures **318** provide termites with an attractive passageway leading to the first material **348**.

The first material **348** is suitable for facilitating the monitoring and/or controlling of termite activity disposed within the housing **302** by promoting or inviting termite exploration and/or feeding. The attractive attribute or property accorded to or presented by the first material **348** could be physical, comestible, or chemical in nature. The first material **348** is selected from the group consisting of a foam-type of material, a digestible material, and a termiticide, or a combination of two or more of these. The foam-type of material may include, but is not limited to, a floral foam. The digestible material may include, but is not limited to, a nourishing material, such as wood. The termiticide may include, but is not limited to, a slow-acting termiticide. The advantage of utilizing a slow-acting termiticide is that a termite that has come into contact with or digested an effective amount of a slow-acting termiticide will be able to return to the termite's nesting area and subsequently poison other termites within the termite colony. The first material **348** is preferably a combination of a floral foam and a slow-acting termiticide.

Most suitably, the first material **348** will be maintained in a wetted condition as a consequence of the damp, humid environment promoted by the shadowing effect of an associated lid **370** (see FIGS. **18**A–**18**C), thereby further promoting or inviting termite exploration, burrowing, and/or feeding. During use, the first material **348** can be periodically rewetted as needed. In addition, the first material **348** is intended to be removably interposed within the elongate interior void **322** of the housing **302**, adjacent to the spacers **320** of the housing **302**, and in close proximity of the apertures **318** of the housing **302**.

Referring now to FIG. **16**, it can be appreciated that the housing **302** of the station **300** may optionally include a core **352** resting within the housing **302**. The core **352** includes a jacket **354**, a partially opened end **356**, and an open end **358** opposing the partially opened end **356**. The jacket **354** has a plurality of termite attractive slits **360**. The core **352** further includes a partition divider **362** forming a number of inner partition chambers **364**. The partition divider **362** defines the partially opened end **356**. The core **352** further includes an outer cylindrical base **366**, which defines the open end **358**.

As shown in FIG. **16**, the jacket **354** of the core **352** is positioned within centrally disposed bore **350** of the first material **348**. The outer cylindrical base **366**, which defines the open end **358** of the core **352**, rests against and is supported by the inner retaining ridge **308** of the partially closed end **310** of the housing **302**.

The core **352** can be cylindrical in shape, as shown in FIGS. **12** and **16**. Alternatively, the core **352** can have some other shape (not shown), such as conical, rectangular, triangular, pyramidal, or the like. The core **352** can be constructed from a substance, such as wood, that is attractive, penetrable and/or digestible by termites. Alternatively, the core **352** can be constructed from a thermoplastic injection molded polymeric material. If so desired, the particular thermoplastic injection molded polymeric material selected could be one in which the core **352** would be transparent in appearance.

An important feature of the third embodiment of the invention resides in the fact that the jacket **354** of the core **352** is structured to provide a plurality of termite attractive slits **360**. As shown in FIGS. **12** and **16**, the slits **360** traverse along the jacket **354** of the core **352** substantially parallel to the central longitudinal axis **324** of the housing **302**. Alternatively, the slits **360** can traverse along the jacket **354** of the core **352** in a substantially spiral or helical direction, with respect to the central longitudinal axis **324** of the housing **302**. Alternatively, the slits **360** can be oriented in a substantially orthogonal or perpendicular fashion with respect to the central longitudinal axis **324** of the housing **302**.

As shown in FIGS. **12** and **16**, the slits **360** that traverse along the jacket **354** of the core **352** have a substantially rectangular cross-sectional profile. However, the slits **360** of the core **352** can be provided in any number of other cross-sectional profiles, such as substantially square, substantially triangular, substantially circular, substantially semi-circular, substantially oval, substantially semi-oval, substantially L-shaped, substantially T-shaped, or substantially X-shaped. The cross-sectional profiles of the slits **360** have a dimension (i.e., width, diameter, or the like) that preferably ranges from about 3 millimeters (mm) to about 5 mm.

It is also important that each slit **360** provide an elongate volume through which termites would be wont to travel and construct mud tubes as part of their excursions to and from their foraging and nesting areas. The slits **360** provide an avenue for termite ingress into and/or egress from the core **352**. Therefore, a slit **360** is always available for a termite to travel through, regardless of whether the termite is traveling either from the outside to the inside, or from the inside to the outside, of the core **352**.

Referring to FIG. **17**, a second termite attractive material **368**, is located within the core **352**, adjacent to the slits **360** within the jacket **354**. The slits **360** within the jacket **354** of the core **352** provide termites with an attractive passageway leading to the second material **368**.

The second material **368** is suitable for facilitating the monitoring and/or controlling of termite activity disposed within the core **352** by promoting or inviting termite exploration and/or feeding. The attractive attribute or property accorded to or presented by the second material **368** could be physical, comestible, or chemical in nature. The second material **368** is selected from the group consisting of a foam-type of material, a digestible material, and a termiticide, or a combination of two or more of these. The foam-type of material may include, but is not limited to, a floral foam. The digestible material may include, but is not limited to, a nourishing material, such as wood. The termiticide may include, but is not limited to, a slow-acting termiticide. The advantage of utilizing a slow-acting termiti-

cide is that a termite that has come into contact with or digested an effective amount of a slow-acting termiticide will be able to return to the termite's nesting area and subsequently poison other termites within the termite colony. The second material **368** is preferably wood in the shape of dowels. The wooden dowels are inserted through the partition divider **362**, defining the partially opened end **356** of the core **352**, and into the inner partition chambers **364**. Partition divider **362** ensures that each dowel is spaced from adjacent dowels, thereby creating termite-attractive passageways between each dowel. The dowels also function to provide additional anchoring support for housing **302** to ensure that housing **302** remains fixed in its proper position at a ground location, and to make station **300** difficult to remove or access by a child or animal.

Preferably, the second material **368** will be maintained in a wetted condition as a consequence of the damp, humid environment promoted by the shadowing effect of lid **370** (see FIGS. **18**A–**18**C), thereby further promoting or inviting termite exploration, burrowing, and/or feeding. During use, the second material **368** can be periodically rewetted as needed. In addition, the second material **368** is intended to be removably located within the core **352**, adjacent to the slits **360** within the jacket **354**.

Referring now to FIGS. **12** and **18**A through **18**C, it can be seen that station **300** includes a lid **370**. As shown in FIGS. **18**A through **18**C, the lid **370** includes a tray **372**, a tray cover **374** hingedly coupled to the tray **372** by a hinge **376**, and a locking mechanism **378**. The tray **372** of the lid **370** includes a peripheral upwardly extending lip **380**, a centrally disposed housing retaining hole **382**, and a plurality of termite attractive orifices **384** surrounding the centrally disposed housing retaining hole **382**. The tray **372** further includes a number of spike orifices **386** surrounding the centrally disposed housing retaining hole **382**, and a number of removable spike tabs **388** covering the spike orifices **386**. The tray may also include a number of anchoring spikes **390** that which are insertable into the spike orifices **386** once the removable spike tabs **388** are actually removed. The tray **372** also includes a cover locking tab **392** and a tapered resilient vertical tab **394** adjacent to the cover locking tab **392**. The tray cover **374** of the lid **370** includes a locking tab receptacle **396**.

The locking mechanism **378** includes the cover locking tab **392** and the tapered resilient vertical tab **394** of the tray **372**, and the locking tab receptacle **396** of the tray cover **374**. As shown in FIG. **18**C, the locking mechanism **378** can be engaged by interlocking the cover locking tab **392** and the tapered resilient vertical tab **394** of the tray **372** with the locking tab receptacle **396** of the tray cover **374**. As shown in FIG. **12**, the locking mechanism **378** can be disengaged by unlocking the cover locking tab **392** and the tapered resilient vertical tab **394** of the tray **372** from the locking tab receptacle **396** of the tray cover **374** via the utilization of a key **398** that includes elongate members or prongs.

The lid **370** can be an irregular polygon, such as an irregular hexagon, as shown in FIGS. **12**, **18**A through **18**C. Alternatively, the lid **370** can have some other shape (not shown), such as regular polygonal, square, triangular, circular, oval, or the like. The lid **370** can be constructed from a substance, such as wood, that is attractive, penetrable and/or digestible by termites. Alternatively, the lid **370** can be constructed from a thermoplastic injection molded polymeric material. If so desired, the particular thermoplastic injection molded polymeric material selected could be one in which the lid **370** would be transparent in appearance.

An important feature of the alternative embodiment resides in the fact that the tray **372** of the lid **370** is structured to provide a plurality of termite attractive orifices **384**. As shown in FIGS. **18**A through **18**B, the orifices **384** surround the centrally disposed housing retaining hole **382**.

As shown in FIGS. **18**A through **18**B, the orifices **384** within the tray **372** of the lid **370** have a substantially circular cross-sectional profile. However, the orifices **384** within the tray **372** of the lid **370** can be present in any number of other cross-sectional profiles, such as substantially square, substantially rectangular, substantially triangular, substantially semi-circular, substantially oval, substantially semi-oval, substantially L-shaped, substantially T-shaped, or substantially X-shaped. The cross-sectional profiles of the orifices **384** have a dimension (i.e., depth, width, diameter, or the like) that preferably ranges from about 3 mm to about 5 mm.

Another important feature of the third embodiment resides in the fact that the orifices **384** within the tray **372** of the lid **370** provide an avenue for termite ingress into and/or egress from the lid **370**. Therefore, an orifice **384** is always available for a termite to travel through, regardless of whether the termite is traveling either from the outside to the inside, or from the inside to the outside, of the lid **370**.

Referring to FIGS. **19**A and **19**B, a third termite attractive material **400** is disposed within the lid **370** adjacent to the orifices **384** within the tray **372**. The orifices **384** within the tray **372** of the core **370** provide termites with an attractive passageway leading to the third material **400**.

The third material **400** is suitable for facilitating the monitoring and/or controlling of termite activity occurring within the lid **370** by promoting or inviting termite exploration and/or feeding. The attractive attribute or property accorded to or presented by the third material **400** could be physical, comestible, or chemical in nature. The third material **400** is selected from the group consisting of a foam-type of material, a digestible material, and a termiticide, or a combination of two or more of these. The foam-type of material may include, but is not limited to, a floral foam. The digestible material may include, but is not limited to, a nourishing material, such as wood. The termiticide may include, but is not limited to, a slow-acting termiticide. The advantage of utilizing a slow-acting termiticide is that a termite that has come into contact with or digested an effective amount of a slow-acting termiticide will be able to return to the termite's nesting area and subsequently poison other termites within the termite colony.

Preferably, the third material **400** exists as a bilayer **402**. The bilayer **402** of third material **400** includes a first layer **404** and a second layer **406**. The first layer **404** is located directly adjacent to the orifices **384** of the tray **372**. The second layer **406** is located directly adjacent to the tray cover **374**. Therefore, the second layer **406** is interposed between the first layer **404** and the tray cover **374**. As shown in FIG. **19**A, the third material **400** of the first layer **404** is preferably wood, in the shape of wedges, which are located directly adjacent to the orifices **384** of the tray **372**. The shape of the wedges are such that the wedges can be positioned into the tray **372** without obstructing the centrally disposed housing retaining hole **382** of the tray **372**. The third material **400** of the second layer **406** is preferably a slow-acting termiticide in combination with an irregular hexagonal sheet of floral foam, having a centrally disposed hole **408** of a diameter equal to that of the centrally disposed housing retaining hole **382** of the tray **372**.

Alternatively, as shown in FIG. **19**B, third material **400** of first layer **404** is constructed from floral foam that includes a slow-acting termiticide, and is situated adjacent to orifices

384 of tray 372. First layer 404 in this embodiment has a hole 408 to accommodate housing 308. Second layer 406 is constructed from wood.

In addition, the third material 400 is preferably wetted to produce a damp and humid environment (or is maintained in a wetted condition as a result of the damp environment promoted by the previously described shadowing effect), which is intended to further promote or invite termite exploration, burrowing, and/or feeding. During use, the third material 400 can be periodically rewetted as needed.

Referring now to FIG. 20, the lid 370 of the station 300 includes a housing 302 whereby the outer rim 312 defining the open end 314 of the housing 302 is supported by the centrally disposed housing retaining hole 382 of the tray 372 of the lid 370.

The lid 370 has several functional features. First, the centrally disposed housing retaining hole 382 and the termite attractive orifices 384 of the lid 370 are useful for providing access to the open end 314 and the apertures 318 of the housing 302. Therefore, the lid 370 provides termites with an encouraging means of travel between the lid 370 and the housing 302.

Second, the lid 370 is also useful for shielding the third material 400 interposed within the lid 370, the first material 348 interposed within the housing 302, and optionally the second material 368 located within the core 352 from the heating and desiccating effects wrought by atmospheric conditions. The lid 370 essentially "shadows" the housing 302 and the areas immediately proximate thereto by creating a barrier to sunlight and acting as a condensation trap. Therefore, the soil, sand, clay, or detritus, or combinations thereof, which are situated beneath the lid 370 are kept cool and humid, according to psychrometric principles, thereby maintaining an optimal environment for attracting termites to the first attractive material 348 within the housing 302 and the third attractive material 400 within the lid 370. As a result, a cool, damp and humid environment is maintained within the lid 370, the housing 302, and the subterranean vicinity around the housing 302 located below the lid 370.

Third, the lid 370 is also useful in identifying the location of the housing 302 after the housing 302 has been installed into a particular ground location. During use, the platform 412 of the lid 370 is substantially flush with the ground surface at the area where housing 302 is to operate. In addition, the third material 400 is intended to be removably interposed within the lid 370, adjacent to the orifices 384 within the tray 372.

Referring now to FIG. 21, the lid 370 of the station 300 may include a plurality of deflector members 410 removably attached to the lid 370. The deflector member 410 includes a platform 412, an elongate wedge 414 downwardly extending perpendicular to the platform 412, a wedge recess or slot 416 provided within the elongate wedge 414, and a plurality of termite attractive grooves 418 provided along the elongate wedge 414 adjacent to the wedge slot 416. The deflector member 410 may further include a detachable cap 420 that couples to the platform 412 directly above the wedge slot 416. Deflector member 410 can be composed of a polymeric material. One or more deflector members 410 are useful for increasing the total area of termite attraction toward station 300.

In addition, the deflector member 410 may also include a water dispenser 422. The water dispenser 422 includes a self-sealing water injection port 424, a water reservoir 426, and a number of water ducts 428. Water dispenser 422 can be composed of a polymeric material. The self-sealing water injection port 424 is a thermoplastic polymer selected from the group consisting of polysiloxane, polytetrafluoroethylene, polyester, nylon, polyolefin, and polyurethane, or a combination of two or more of these.

An important feature of the present embodiment resides in the fact that the elongate wedge 414 of the deflector member 410 is structured to provide a plurality of termite attractive grooves 418. As shown in FIG. 21, the grooves 418 traverse along the elongate wedge 414 adjacent to the wedge slot 416, substantially perpendicular to the platform 412 of the deflector member 410. Alternatively, the grooves 418 can traverse along the elongate wedge 414 adjacent to the wedge slot 416 at an angle other than a right angle relative to the platform 412 of the deflector member 410. Grooves 418 provide termites with access into slot 416.

As shown in FIG. 21, the grooves 418 that traverse along the elongate wedge 414 adjacent to the wedge slot 416 have a substantially rectangular cross-sectional profile. However, the grooves 418 of the deflector member 410 can be present in any number of other cross-sectional profiles, such as substantially square, substantially triangular, substantially circular, substantially semi-circular, substantially oval, substantially semi-oval, substantially L-shaped, substantially T-shaped, or substantially X-shaped. The cross-sectional profiles of the grooves 418 have a dimension (i.e., width, diameter, or the like) that ranges from about 3 mm to about 5 mm.

It is also important that each groove 418 provide an elongate volume through which termites would be wont to travel and construct mud tubes as part of their excursions to and from their foraging and nesting areas. The grooves 418 provide an avenue for termite ingress into and/or egress from the deflector member 410. Therefore, a groove 418 is always available for a termite to travel through, regardless of whether the termite is traveling either from the outside to the inside, or from the inside to the outside, of the deflector member 410.

The deflector member 410 may further include a lip attachment hook 430 for attaching the deflector member 410 to the peripheral upwardly extending lip 380 of the lid 370. Lip attachment hook 430 can be composed of a polymeric material.

Referring to FIG. 21, a fourth termite attractive material 432 (also shown in FIG. 12), is located within the wedge slot 416 of the deflector member 410, adjacent to the grooves 418 provided along the elongate wedge 414. The grooves 418 provided along the elongate wedge 414 of the deflector member 410 provide termites with an attractive passageway leading to the fourth material 432.

The fourth material 432 is suitable for facilitating the monitoring and/or controlling of termite activity disposed within the deflector member 410 by promoting or inviting termite exploration and/or feeding. The attractive attribute or property accorded to or presented by the fourth material 432 could be physical, comestible, or chemical in nature. The fourth material 432 is selected from the group consisting of a foam-type of material, a digestible material, and a termiticide, or a combination of two or more of these. The foam-type of material may include, but is not limited to, a floral foam. The digestible material may include, but is not limited to, a nourishing material, such as wood. The termiticide may include, but is not limited to, a slow-acting termiticide. The advantage of utilizing a slow-acting termiticide is that a termite that has come into contact with or has digested an effective amount of a slow-acting termiticide will be able to return to the termite's nesting area and

subsequently poison other termites within the termite colony. The fourth material **432** is preferably wood in the shape of wedges. The wooden wedges are inserted into the wedge slot **416** within the elongate wedge **414**, which has a plurality of termite attractive grooves **418** adjacent thereto.

Most suitably, the fourth material **432** is wetted to produce a damp and humid environment (or is maintained in a wetted condition as a result of use of water dispenser or dispensers **432**), which is intended to further promote or invite termite exploration, burrowing, and/or feeding. During use, the fourth material **432** can be periodically rewetted as needed. In addition, the fourth material **432** is intended to be removably located within the wedge slot **416** of the deflector member **410** adjacent to the grooves **418** provided along the elongate wedge **414**.

The deflector member **410** has several functional features. First, the elongate wedge **414** of the deflector member **410** provides additional anchoring support of the lid **370**. Second, the deflector member **410** intercepts the natural paths of termites foraging in the vicinity of the housing **302** and redirects or at least encourages the termites to travel toward the housing **302**. Third, the deflector member **410** is also useful for increasing the area of termite attraction by providing a fourth material **432** and maintaining the dampness or moisture content of the area surrounding the deflector member **410** as well as the housing **302** via a water dispenser **422**.

Referring now to FIGS. **22** through **31** to describe in detail the assembly of station **300**, the station **300** is assembled by first inserting the core **352** into the housing **302** and then inserting the first material **348** interposed between the core **353** and the housing **302** (see FIG. **22**). Alternatively, core **352** is first inserted into axial bore **350** of first material **348** prior to insertion of first material **348** into housing **302**. Once a particular ground location is chosen, a hole is then bored into the ground, such as soil, sand, clay, or detritus, or combinations thereof. The diameter of the hole in the ground must be substantially the same as the diameter associated with the centrally disposed housing retaining hole **382** of the lid **370** which is positioned substantially flush with the ground location (see FIG. **23**). The partially closed end **310** of the housing **302** is passed through the centrally disposed housing retaining hole **382** of the lid **370** and inserted into the ground (see FIG. **24**). The outer rim **312** of the open end **314** of the housing **302** is supported by the centrally disposed housing retaining hole **382** of the lid **370**. The second material **368** is then inserted into the core **352** (see FIG. **25**) and any excess second material **368** is removed (see FIG. **26**). The removable spike tabs **388** are removed from the tray **372** (see FIG. **27**), leaving behind spike orifices **386** into and through which anchoring spikes **390** are inserted to provide the lid **370** with anchoring support (see FIG. **28**). A deflector member **410** is then attached via the lip engagement hook **430**, to the peripheral upwardly extending lip **380** of the lid **370** (see FIG. **29**). The third material **400** is inserted into the lid **370** and the fourth material **432** is inserted into the wedge slot **416** of the deflector member **410** (see FIG. **30**). Finally the tray **372** and the tray cover **374** are secured together via the locking mechanism **378** (see FIG. **31**). Apparatus **300** is now ready to monitor and/or control termites as described herein.

It will be understood that various details of the invention may be changed without departing from the scope of the invention. Furthermore, the foregoing description is for the purpose of illustration only, and not for the purpose of limitation-the invention being defined by the claims.

What is claimed is:

1. A termite monitoring and/or controlling apparatus comprising:

(a) a housing adapted for subterranean installation at a ground location and including a wall disposed along a longitudinal axis of the housing, the wall including a termite attractive channel, the channel having a plurality of termite attractive apertures;

(b) a first termite attractive material disposed within the housing adjacent to the apertures and having an axial bore generally parallel with the longitudinal axis; and

(c) a second termite attractive material disposed within the axial bore.

2. The apparatus according to claim **1** wherein the second termite attractive material is partitioned into a plurality of second termite attractive material subcomponents, each subcomponent extending generally in parallel with the longitudinal axis and spaced from the other subcomponents.

3. The apparatus according to claim **2** comprising a core disposed within the axial bore of the first termite attractive material, the core including a partitioning structure defining a plurality of axially oriented core subsections, wherein each second termite attractive material subcomponent is retained by the partitioning structure in a corresponding one of the core subsections.

4. The apparatus according to claim **1** wherein the first termite attractive material includes a material selected from the group consisting of foam, wood, and termiticide, or a combination of two or more of these.

5. The apparatus according to claim **4** wherein the first termite attractive material consists essentially of a floral foam and a slow-acting termiticide.

6. The apparatus according to claim **1** wherein the second termite attractive material includes a material selected from the group consisting of foam, wood, and termiticide, or a combination of two or more of these.

7. The apparatus according to claim **6** wherein the second termite attractive material consists essentially of wood.

8. The apparatus according to claim **1** comprising:

(a) a lid adapted for being positioned substantially flush with the ground location, the lid including a tray and a tray cover hingedly coupled to the tray, the tray having a housing retaining aperture and a plurality of termite attractive orifices, wherein the housing extends through the housing retaining aperture; and

(b) a third termite attractive material disposed on the tray adjacent to the termite attractive orifices thereof.

9. The apparatus according to claim **8** wherein the lid includes a locking mechanism for removably securing the tray cover to the tray.

10. The apparatus according to claim **9** wherein the locking mechanism includes a cover locking tab, a tapered resilient vertical tab adjacent to the cover locking tab, and a locking tab receptacle adapted for engagement with the cover locking tab.

11. The apparatus according to claim **10** comprising a key adapted for engagement with the locking mechanism to release the locking mechanism.

12. The apparatus according to claim **8** wherein the tray includes a spike orifice covered by a removable spike tab, and an anchoring spike insertable into the spike orifice after the spike tab is removed.

13. The apparatus according to claim **8** wherein the third termite attractive material includes a material selected from the group consisting of foam, wood, and termiticide, or a combination of two or more of these.

14. The apparatus according to claim 13 wherein the third termite attractive material consists essentially of a floral foam, wood, and a slow-acting termiticide.

15. The apparatus according to claim 1 comprising a deflector member extending generally radially with respect to the housing, the deflector member including a wedge adapted for at least partial subterranean installation at the ground location.

16. The apparatus according to claim 15 comprising a tray extending transversely with respect to the housing, wherein the deflector member is removably attached to the tray.

17. The apparatus according to claim 16 wherein the deflector member includes a hook removably engaging the tray.

18. The apparatus according to claim 15 wherein the wedge has a recess extending downwardly into the wedge and a termite attractive groove formed in the wedge to provide access to the recess, the deflector member includes a cap removably covering an opening of the recess, and the apparatus further comprises a fourth termite attractive material disposed in the recess.

19. The apparatus according to claim 18 wherein the deflector member includes a water dispenser, the water dispenser including water injection port, a water reservoir, and a water duct.

20. The apparatus according to claim 19 wherein the water injection port is formed form a thermoplastic polymer selected from the group consisting of polysiloxane, polytetrafluoro-ethylene, polyester, nylon, polyolefin, and polyurethane, or a combination of two or more of these.

21. The apparatus according to claim 18 wherein the fourth termite attractive material includes a material selected from the group consisting of foam, wood, and termiticide, or a combination of two or more of these.

22. The apparatus according to claim 21 wherein the fourth termite attractive material consists essentially of wood.

23. A termite monitoring and/or controlling apparatus comprising:

(a) a housing having a plurality of termite attractive channels, a partially closed end, and an open end opposing the partially closed end, the channels having a plurality of termite attractive apertures, the housing adapted for subterranean installation at a ground location;

(b) a first termite attractive material having a centrally disposed bore, the first attractive material disposed within the housing adjacent to the apertures;

(c) a lid having a housing retaining hole and a plurality of termite attractive orifices, the lid adapted for being positioned substantially flush with the ground location, wherein the open end of the housing is supported by the housing retaining hole;

(d) a second termite attractive material disposed within the lid adjacent to the orifices;

(e) at least one deflector member having a platform, an elongate wedge downwardly extending perpendicular to the platform, a wedge slot provided within the elongate wedge, and a plurality of termite attractive grooves provided along the elongate wedge adjacent to the wedge slot, the platform being removably attached to the lid and adapted for being positioned substantially flush with the ground location; and

(f) a third termite attractive material located within the wedge slot of the deflector member adjacent to the grooves.

24. A termite monitoring and/or controlling apparatus comprising:

(a) a housing having a plurality of termite attractive channels, a partially closed end, and an open end opposing the partially closed end, the channels having a plurality of termite attractive apertures, the housing adapted for subterranean installation at a ground location;

(b) a first termite attractive material having a centrally disposed bore, the first attractive material disposed within the housing adjacent to the apertures;

(c) a core having a jacket, a partially opened end, and an open end, the jacket having a plurality of termite attractive slits, the jacket positioned within the centrally disposed bore of the first attractive material, the open end of the core resting against the partially closed end of the housing within the housing;

(d) a second termite attractive material located within the core and adjacent to the slits;

(e) a lid having a housing retaining hole therein and a plurality of termite attractive orifices, wherein the open end of the housing is supported by the housing retaining hole, and the lid is adapted for being positioned substantially flush with the ground location;

(f) a third termite attractive material disposed within the lid adjacent to the orifices;

(g) at least one deflector member having a platform, an elongate wedge downwardly extending from the platform, a wedge slot provided within the elongate wedge, and a plurality of termite attractive grooves provided along the elongate wedge adjacent to the wedge slot, the platform being removably attached to the lid and adapted for being positioned substantially flush with the ground location; and

(h) a fourth termite attractive material located within the wedge slot of the deflector member adjacent the grooves.

25. A termite monitoring and/or controlling apparatus comprising:

(a) a housing adapted for subterranean installation at a ground location and including a wall disposed along a longitudinal axis of the housing, the wall including a termite attractive channel, the channel including a plurality of termite attractive apertures;

(b) a first termite attractive material disposed within the housing adjacent to the apertures and including an axial bore generally parallel with the longitudinal axis;

(c) a second termite attractive material disposed within the axial bore;

(d) a tray extending transversely with respect the housing; and

(e) a third termite attractive material disposed adjacent to a surface of the tray.

26. The apparatus according to claim 25 comprising a wedge including a top edge removably connected to the tray and a body depending downwardly from the top edge.

27. The apparatus according to claim 26 wherein the wedge has an interior region and a slot communicating with the interior region, and wherein a fourth termite attractive material is disposed within the interior region.

28. A termite monitoring and/or controlling apparatus comprising:

(a) a housing adapted for subterranean installation at a ground location and including a wall disposed along a longitudinal axis of the housing, the wall including a termite attractive channel, the channel including a plurality of termite attractive apertures;

(b) a first termite attractive material disposed within the housing adjacent to the apertures and including an axial bore generally parallel with the longitudinal axis;

(c) a second termite attractive material disposed within the axial bore;

(d) an enclosure extending generally transversely with respect the housing, the enclosure including a tray, a tray cover, and a locking mechanism removably securing the tray cover to the tray; and

(e) a third termite attractive material disposed within the enclosure.

29. The apparatus according to claim **28** wherein the locking mechanism includes a cover locking tab formed in the tray, a tapered resilient vertical tab formed in the tray and disposed adjacent to the cover locking tab, and a locking tab receptacle formed in the tray cover and adapted for engagement with the cover locking tab.

30. The apparatus according to claim **29** comprising a key device adapted for insertion into the locking tab receptacle and for engagement with the cover locking tab.

* * * * *